

# ***Junior Angler***



***Wisconsin Aquatic Resources Education***

## **Hello Anglers!**

*What lucky kids! You always knew that fish were in schools. You just didn't realize you'd get to go to school with them. Now you get to see how and where they live and how to catch them!*

*Just as important, you'll be learning what you can do to keep Wisconsin's lakes and streams healthy. You know what happens when your room gets messed up - you trip over stuff and it's not too safe. Well, the same for fish. When their space gets messed up with chemicals, tons of dirt and junk, it's not too safe for them and they don't grow and thrive.*

*We know it's not always smooth sailing for fisheries and aquatic habitat. There will always be work to be done to make sure that our waters will always be fishable and swimmable. There are plenty of opportunities to get involved in protecting natural resources. We hope you rise to the challenge of being a voice for protecting habitat for fish and wildlife.*

*We're glad you're giving fishing a try!*

*Theresa Stabo*

*Aquatic Resources Education Director*

*P. S. Remember to thank the adults who have arranged your fishing and water investigation adventures!*

### **Author:**

Theresa Stabo

### **Copy Editors:**

Judy Klippel and  
Beth Bernhardt

### **Graphic**

### **Designer:**

Linda Pohlod

### **Illustrators:**

John Miller,  
Jim McEvoy,  
Georgine Price,  
Virgil Beck,  
Jens Von Sivers  
and Linda Pohlod

### **Contributors & Reviewers:**

Steve Kinzel, Ph.D., UW-Extension 4-H Youth Development Specialist

Gene Tiser, Department of Natural Resources Editor

Dennis Vanden Bloomen, Ph.D., Professor of International Business

Dennis Yockers, Ph.D., Associate Professor of Environmental Education, College of Natural Resources, UW-Stevens Point

And many dedicated Angler Education instructors and Fisheries Management and Habitat Protection staff who have provided us with valuable feedback over the years.

**Thank you, all.**



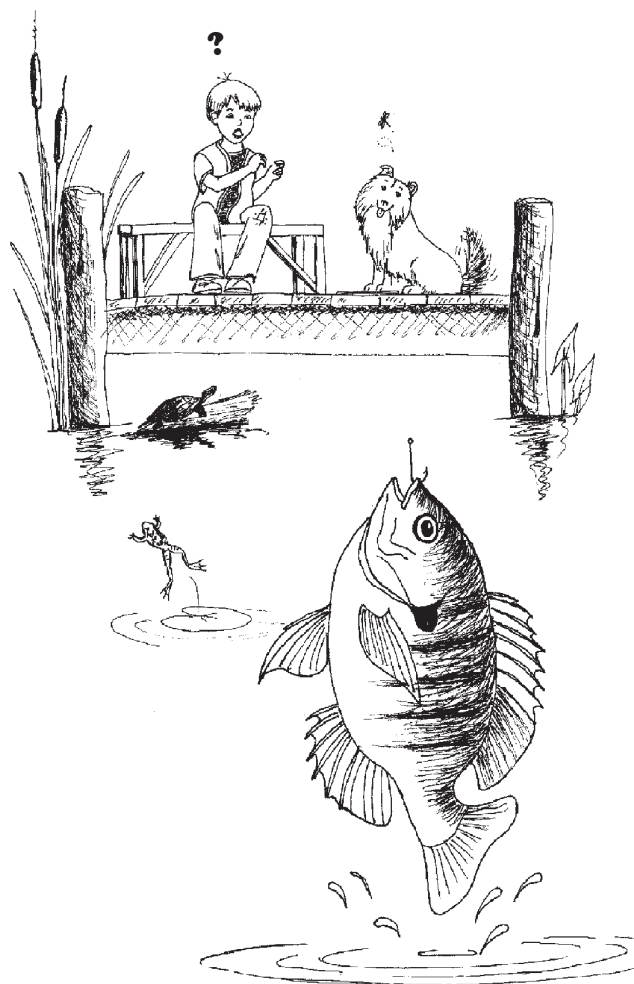
# Fish On!

What do you need for a fishing adventure? Look for clues as you go through this booklet. Then, come back to this page to fill in the checklist of things you need for a safe fishing trip. You'll also discover what it takes to make Wisconsin a great state to fish and learn about some of the people who help to keep it so.

## Happy Fishing!

☒ **Angler's Checklist**

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## The Complete Angler



Use drawings, photos, or magazine clippings to complete the illustration and show what this angler needs for a successful outing.



## Angler's Checklist:

Cut out your completed checklist, put it in a clear plastic bag, and keep it in your tackle box.

If your fishing trip is part of a school program, check your school's policy on bringing knives to school. It may be best to leave your fishing knife at home.

# Fishing Villages

Fish have been the lifeblood of towns and villages for ages. Millions of people like to catch and eat fish, while others earn their living by selling tackle and providing other services to anglers.



What evidence links fishing to Wisconsin's past?

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How does angling contribute to local economies?

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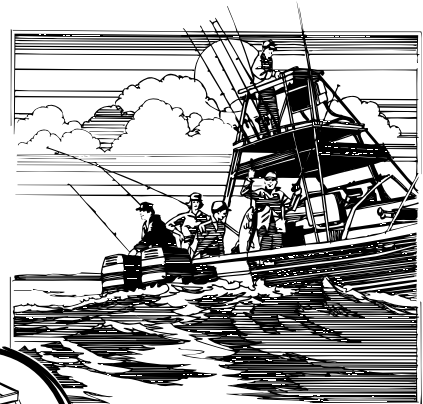
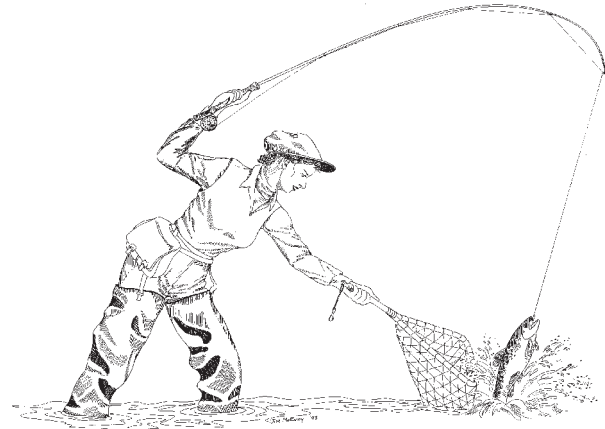
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How many businesses and jobs can you list that are supported by a healthy fishery?

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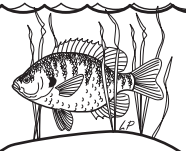
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Wow! Fishing lures a lot of money into Wisconsin. Anglers support more than 30,000 jobs and spend over a billion dollars every year! For current numbers, see the American Sportfishing Association Web site, [www.asafishing.org](http://www.asafishing.org).



# Head for the Water!

*The Northwest Ordinance of 1787 guarantees all citizens access to all the navigable waters of the state.*

*"The navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same, shall be common highways, and forever free..."*

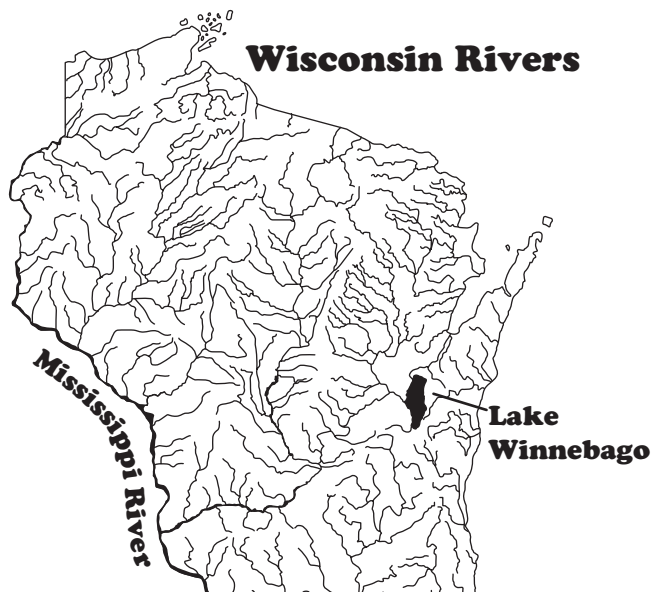
## Chart Your Course

Our state abounds with lakes, rivers, streams, and wetlands that are home to over 150 species of fish (native and non-native) and many

other types of aquatic wildlife. Where is your favorite place to fish in Wisconsin? Use a state highway map to help pinpoint your fishing "hot spot" on the map on this page. Write an essay describing what makes this place special and illustrate it with pictures of your favorite fish or other aquatic animal.

You don't have to study a map of Wisconsin for long to see that we live in a water-rich state. Water has been important to residents and visitors for ages. The very name Wisconsin comes from *Wees-kan-san*, Ojibwa for "gathering of the waters." Many towns share their names with lakes, rivers, and creeks. In other cases, the name somehow notes the significance of water. Two Rivers, Green Bay, and Portage are just a few examples of towns that reflect the water near them. How many more can you come up with?

Why were those towns established? What caused their growth and, in some cases, decline? What effect did the activities along the water have on the fish? What effect did the fish have on the town? What does the town's name say about our state's ethnic heritage? How was fishing important to those cultures?



Wisconsin has 44,000 miles of rivers and 15,000 lakes, plus 1,017 miles of Great Lakes shoreline.

# Hooray for Habitat!

All animals (including you!) have certain habitat needs that must be met to ensure survival. Food, shelter, space, and water are four requirements that make up an animal's home (habitat). If habitat needs aren't met, the animal will have a difficult time living and reproducing.

Fish are a diverse group of animals that live in a variety of aquatic habitats in Wisconsin.

Here are some examples of how habitat requirements are met for Wisconsin fish.

## Habitat Requirements

**Food . . .** Fish eat a variety of foods.

Depending on fish species, season and food availability, fish may prey upon **other fish**, **insects**, **plankton**, **worms** and **nightcrawlers** and **crayfish**.

**Water . . .** Water that's clean, well-oxygenated and at the right temperature is essential.

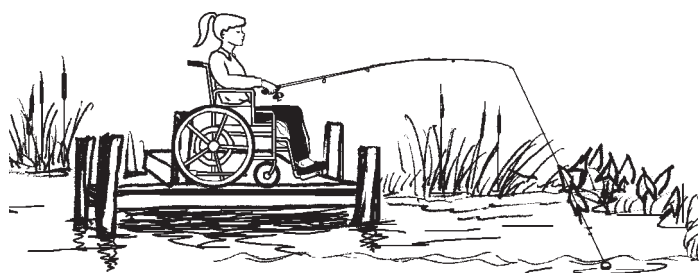
Wisconsin fishes are grouped according to their preferred summer water temperatures: **coldwater** (< 55° F), **coolwater** (55°-75° F) and **warmwater** (> 75° F).

**Shelter . . .** Shelter (cover) includes **weed beds**, **logs**, **stumps**, **brush** and **rocks**.

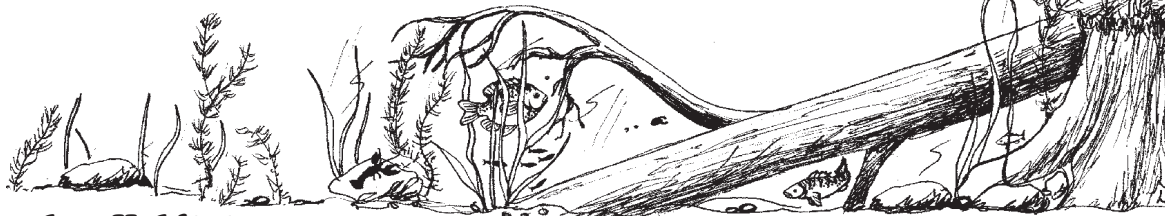
Fish need cover to hide or rest and use as ambush points when feeding.

**Space . . .** Fish need space for their daily and seasonal routines. Although crowding may occur in smaller streams and ponds, space usually doesn't limit Wisconsin fishes.

Using the **bolded** words from the food, water and shelter habitat definitions above, fill in the blanks on the table below to describe the needs of each fish species listed. Assume these fish are adults found during the summer season. When researching the food and shelter requirements, you may find additional examples. Include them on the table, and be ready to share them with the rest of the group.



Habitat Requirement	Fish Species				
	Bluegill	Brook Trout	Walleye	Muskellunge	Catfish
<b>Food</b>					
<b>Water</b>					
<b>Shelter</b>					

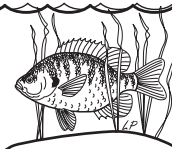


## Shoebox Habitat

Draw the habitat for your favorite fish, or create a shoebox diorama that shows good habitat for that species. Be sure to include the fish you selected in a likely food chain.

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There are about 3,700 dams on Wisconsin's streams and rivers that block the passage of fish to spawning and feeding habitats. Since 1992, over 50 dams have been removed and fish have been welcomed back to restored river habitats.





# Living Room

What would you need to keep comfortable should a blizzard strike and trap the whole group in your meeting or classroom for many days? What is the one thing in shortest supply (**limiting factor**) right now? How many people can be safely and comfortably seated in the room once all your other needs are met? This is the room's **carrying capacity**.

Lakes and streams have limits to the number of organisms they can support, too. Imagine a one-acre body of water\* that has enough food, oxygen and shelter to support 300 pounds of fish. If one of these needs is in short supply, that need becomes the **limiting factor**. The number of pounds of fish that an aquatic system will support is called the **carrying capacity**. When too many fish occupy an area to support healthy growth, that area's carrying capacity is exceeded. Several

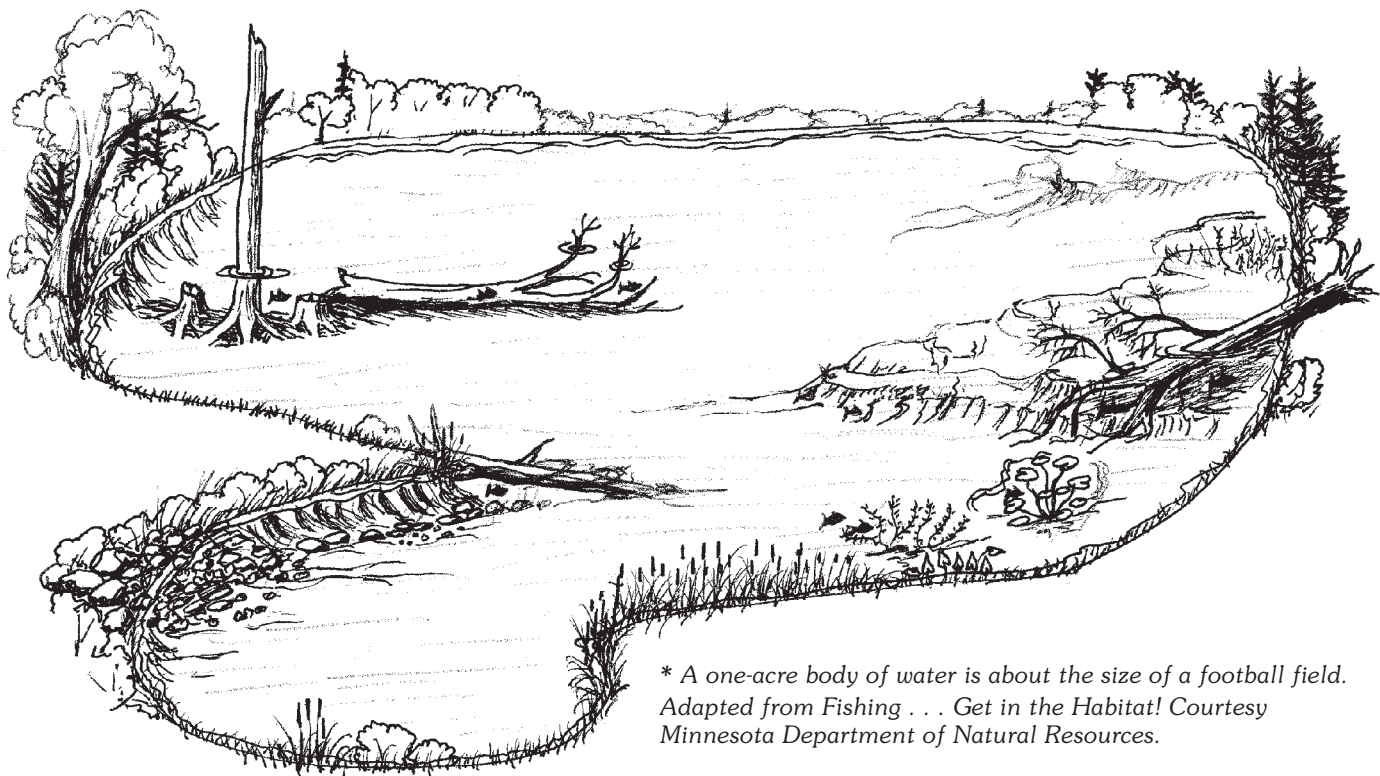
organisms will feel the effects, not just the fish. Area alone may not always be the limiting factor. Food chains can be stretched to the breaking point and oxygen can be depleted.

What kinds of events can affect the food and oxygen supplies and, in turn, the fish? For example, how would a manure spill affect the equilibrium of the system?

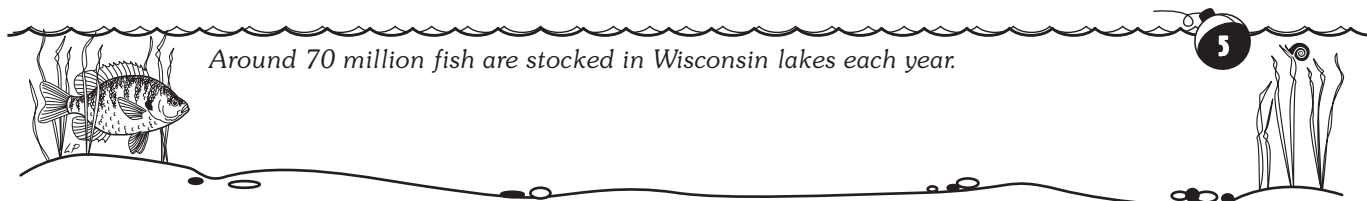


Decide if this one-acre body of water is a pond or a stretch of stream.

Choose the fish you would like to stock from the *Wisconsin Wildcards* and assign them weight values. Be careful to calculate the total weight of the fish you are stocking. Now, consider the fish you stocked. Why did you choose them? Do you like to catch them? Do they share similar types of habitat needs?



\* A one-acre body of water is about the size of a football field.  
Adapted from *Fishing . . . Get in the Habitat!* Courtesy  
Minnesota Department of Natural Resources.



Around 70 million fish are stocked in Wisconsin lakes each year.

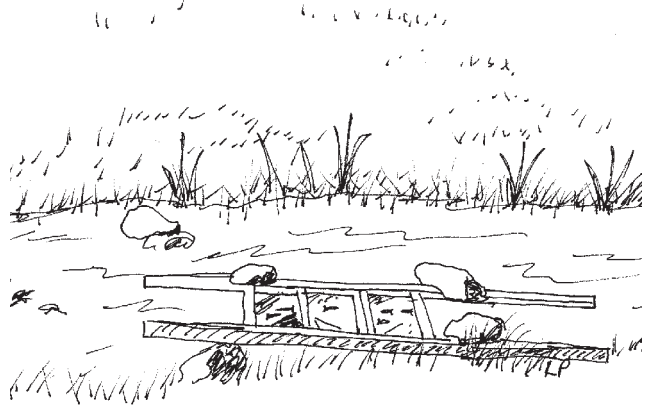
# Wetland Habitats

## What kinds of plants and animals can you find in a wetland?

### Wetlands . . .

- are nurseries for fish, birds and many other animals.
- filter impurities from water before it trickles into drinking water wells.
- catch floodwaters.
- catch sediments in runoff before they enter open water and cover fish spawning beds.
- have plants that hold soil and water and provide food for animals.

Spring rains and snowmelt often flood rivers and spill into wetlands. When wetlands are destroyed, water still spills into the "old wetland." Sometimes homes, shopping malls and farm fields get flooded.



### Backyard Fish!

Neighborhoods in Green Bay are awash with spawning northern pike each spring when meltwaters flood backyards. In a natural wetland, northern pike eggs stick to marsh plants which keep them from suffocating in the sediments.

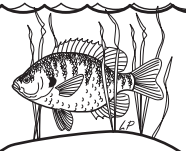
**We lose a lot when we lose wetlands.**



Jim McEvoy



Wisconsin now has about half of the 10 million acres of wetlands that were present at the time of statehood, 1848.





# Shoreland Homes



The water's edge is a busy place. Fallen logs and a tangle of plants are home to every manner of splashing, buzzing and chirping thing.



These diverse areas are under pressure from development, as little weekend cabins are replaced with year-round homes and shorelines are “cleaned up.”



Find out more about lakes and their inhabitants at:  
[dnr.wi.gov/org/caer/ce/eeek/nature/habitat/lakes.htm](http://dnr.wi.gov/org/caer/ce/eeek/nature/habitat/lakes.htm).

Shoreland building increased 216% between 1965 and 1995 and continues today.

# Alien Invasion!

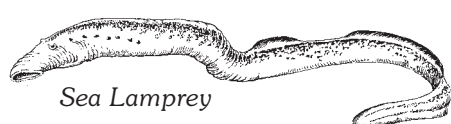
Exotic. Alien. Non-native. Whatever you call them, plants and animals that make their way to new places can compete with native species for habitat and be hard to eradicate.

Some exotics entered Wisconsin waters as stowaways on freighters, while others swam into the Great Lakes from the ocean through the Welland Canal. Well-meaning people thought they could improve on what nature offered. The Fisheries Commission, for example, stocked carp to increase food production before understanding how carp would adversely affect native fish habitat.

## Ports of Entry for Exotics



Find out how these exotic species got here on the Department of Natural Resources Web site, [dnr.wi.gov/eeek/earth/aliens.htm](http://dnr.wi.gov/eeek/earth/aliens.htm).



Sea Lamprey



Zebra Mussels



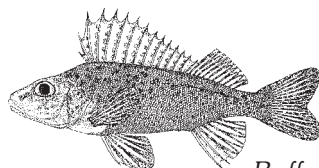
Rusty crayfish



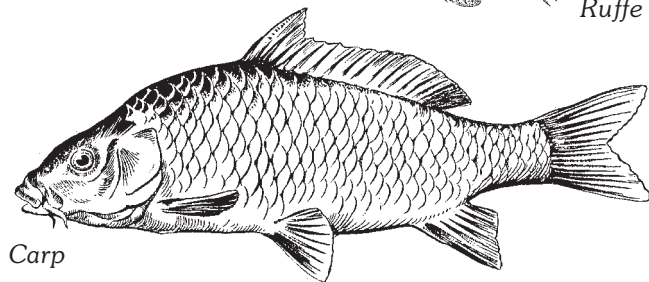
Spiny water flea



Alewives



Ruffe



Carp

## Welcome Introductions

Salmon and trout were first introduced in the late 1800's for sport, then in the 1960's to devour alewives that were washing up on beaches. Still stocked today, these exotics are a thrill to catch!

Unscramble the names of these exotic fish.  
Hint: all are two-word names.



kaohilsonmcno \_\_\_\_\_



nhoacmloso \_\_\_\_\_



rwtonrbuto \_\_\_\_\_

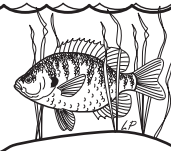


toiburontarw \_\_\_\_\_



Take a look at the egg collection facilities where we roll out the welcome mat for some exotics, [dnr.wi.gov/org/water/fhp/fish/pubs/3wafish.htm](http://dnr.wi.gov/org/water/fhp/fish/pubs/3wafish.htm).

There are 161 exotic species in Wisconsin's waters, including the Great Lakes; 19 are fish. In 1882, the City of Ripon passed an ordinance "prohibiting fishing in all waters within the city limits for two years" to ensure the survival of carp.



# When a Plant Becomes a Weed . . .

Aquatic plants release oxygen into the water for fish to use and provide places for fish to hide and spawn. Exotic plants choke out native species and can grow in stands so thick that fish can't maneuver. Fish are robbed of oxygen when excess plants die and decompose.

We have many exotic plants in Wisconsin. Some exotics were accidentally introduced, while others were planted in gardens and soon grew out of control. Now many are considered *invasive*.

Removing exotic plants is a big job, often requiring the use of mechanical harvesters, fire, or herbicides. If you'd like to help, get involved with a local conservation organization.

Report sightings of these plants to the Department of Natural Resources:



Purple loosestrife



**One plant that everyone can help remove is purple loosestrife.**

## Follow these steps:

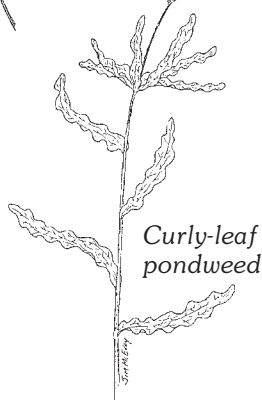
1. **Make a positive identification.**
2. Get permission from the landowner or property manager to remove plants.
3. Cut flower tops off before they go to seed.
4. Wrap plant parts and place in trash so the plant doesn't spread.
5. Report the location to the aquatic plant manager at your nearest DNR regional office.
6. Plant and restore native species in the area.

## You can prevent the spread of exotics.

1. Always remove plants and animals from your boat, trailer, and fishing equipment before you leave the fishing area.
2. Share your extra minnows with another angler instead of dumping them in the lake or stream.
3. Never dump aquarium pets or plants into lakes or streams.
4. Never move fish, plants or water from one lake or stream to another; you might be spreading exotics.



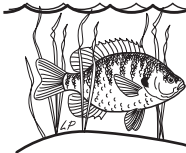
Eurasian water milfoil



Curly-leaf pondweed



Reed canary grass



Many of us plant exotics. Tulips, for example, meet the definition, but are not considered invasive. They don't spread and crowd out native species.





# Friends in the Field



Many people at the Department of Natural Resources work hard to keep the fishing lively. Match each drawing to an activity listed below.

- \_\_\_ A. Improve habitat
- \_\_\_ B. Land use planning
- \_\_\_ C. Research and restoration
- \_\_\_ D. Measure and count fish populations
- \_\_\_ E. Educate
- \_\_\_ F. Raise and stock fish

“Conservation” means using our fish, water, forests, wildlife, air, and land wisely so that we will always have them to enjoy. Conservation

“Conservation” means using our fish, water, forests, wildlife, air and land wisely so that we will always have them to enjoy. Conservation wardens enforce rules that protect our natural resources from damage. If you see a problem that threatens our natural resources, call the TIP (Turn In Poachers) Hotline: 1-800-TIPWDNR (1-800/847-9367).

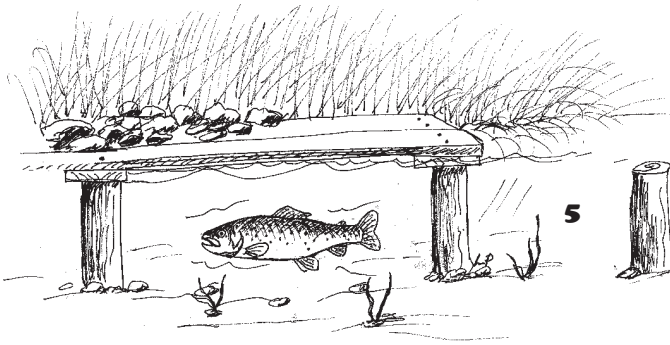
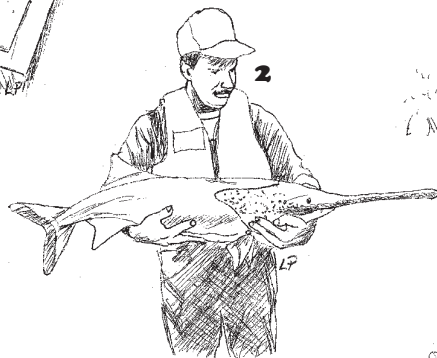
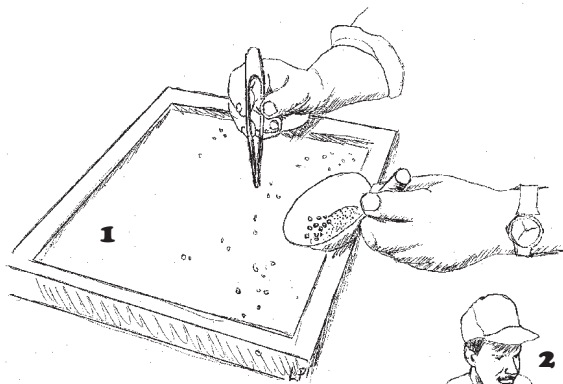


You can find out who your warden is by calling your local DNR office or 608/266-2141.



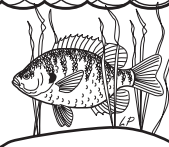
The conservation warden for my areas is:

Telephone number:



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Wisconsin has pioneered many conservation ideas and techniques. Conservation leaders such as John Muir, Aldo Leopold, Frances Hammerstrom and Gaylord Nelson have called Wisconsin home as well as distinguished biologists like Arthur Hasler, C.D. “Buzz” Besadny, and many more. Who’s your conservation hero?



# An Egg-citing Race!

Fish lay thousands of eggs at a time. Animals and other fish eat many eggs, while disease or pollution destroys others. Witness the perils that await a mass of eggs. See how many survive long enough to hatch. You'll need a coin, a partner, a token for each of you, and

pencil and paper to keep track of your egg totals. Remember that eggs are only saved or lost, but never added to the initial total.

To play, take turns flipping a coin to move along the eggs.

Heads = 1 space

Tails = 2 spaces

**Start with 1,000 eggs.**

**Turtle eats 50 eggs.**

**Eggs too small for garter snake to see . . . Go ahead 4 spaces.**

**Crayfish nibbles eggs for dinner . . . Lose 50.**

**Frog swims by, but doesn't see eggs.**

**3rd grader steps on 100 eggs.**

**Eggs washed in by storm water from city streets, stranded in poor habitat . . . Lose 50.**

**Round goby, an exotic, devours eggs . . . Lose 100 eggs.**

**Fish unable to jump dam to reach spawning grounds Go back 3 spaces.**

**Snail can't find eggs, eats phytoplankton instead.**

**Fungus attacks eggs . . . Lose 100.**

**Go ahead 2.**

**Skinny minnow eats 50 eggs.**

**Dam removed; fish can swim upstream to spawn. Move ahead 3 spaces.**

**Wood duck swims by swishing away silt and saving 50 eggs.**

**A boater accidentally spills motor oil in the water near eggs Lose 50.**

**Ruffe, an exotic, gobbles 100 eggs.**

**Go back 3.**

**Same 3rd grader picks up litter in water . . . saves 100 eggs.**

**Kids throw rocks into water . . . squish 50 eggs.**

**Go ahead 2.**

**Sucker slurps 50 eggs.**

**Raccoon swims by, distracted by old cookie lying on shore.**

**Eroded soil buries 100 eggs.**

**Big bass heads straight for eggs . . . chomps a little pumpkinseed instead.**

**Water insects chomp 50 eggs.**

**A good day to hatch!**

How many eggs survived long enough to hatch? What are their next stages of life and what hazards await them there?

Wisconsin has fourteen state fish hatcheries and three main egg collection facilities that work together to ensure recreational fishing opportunities.

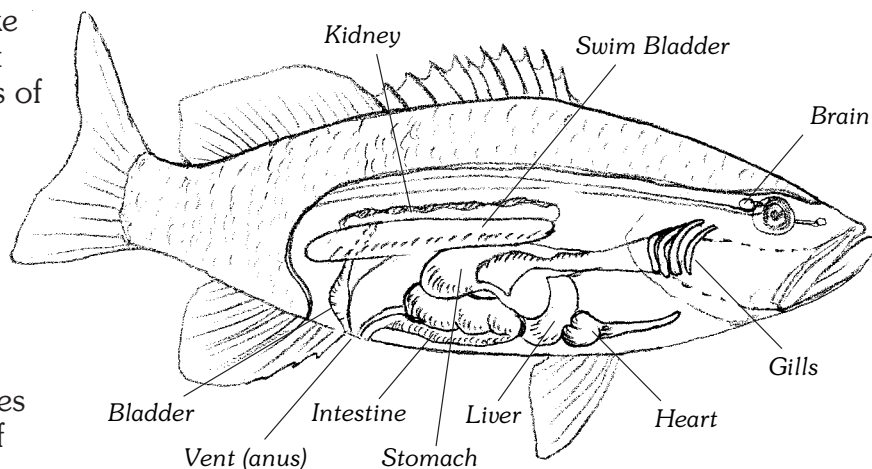
# Fish Inside. . .

**What makes a fish a fish?** Fish have special adaptations that make them suited for life in the water. It helps to know the distinctive parts of fish as you learn to identify them.

**Fins . . .** Fins allow the fish to balance, move and aim itself. The dorsal, pelvic and anal fins balance the fish and keep it upright. Pectoral fins help a fish position or aim itself. Pectoral fins also act as breaks. A fish uses its tail (caudal) fin to propel itself forward. Trout, salmon and bullheads also have a small fleshy fin near the tail, called an *adipose* fin.

**Shape . . .** Moving through the water is hard work! Many fish, like trout, are streamlined to allow them to easily slip through the water. Others, like bluegill, are flatter so they can hide in weeds and dart away from predators.

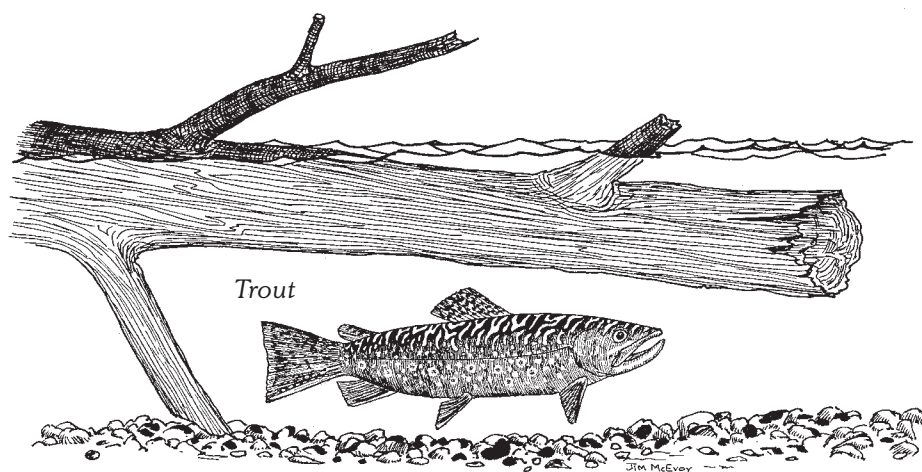
**Color . . .** Whether they are predator or prey, fish need to go undetected by other fish. Markings and color patterns camouflage fish in weeds and murky waters.



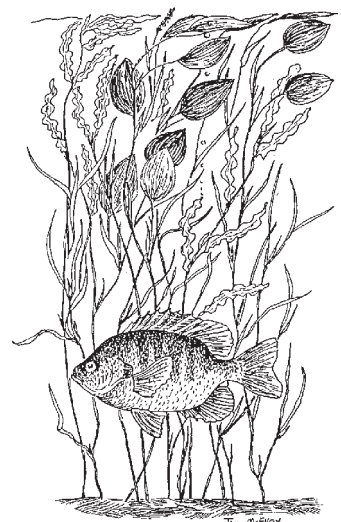
Bullheads are dark on top and blend in with dark water, making them hard to see from above.

Their light-colored underbellies blend in with the light sky above, making them hard to see from below.

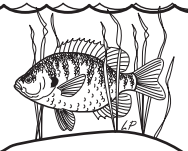
**Gills . . .** Fish breathe through gills that remove oxygen from the water. Water flows through the fish's mouth, over its gills, and out through gill vents.



Trout



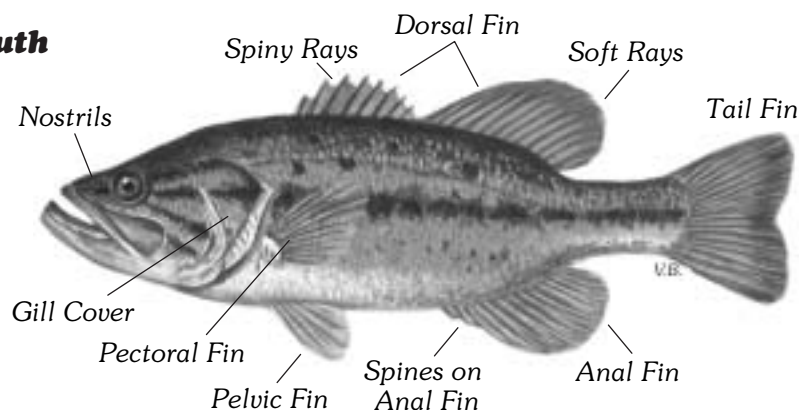
Bluegill



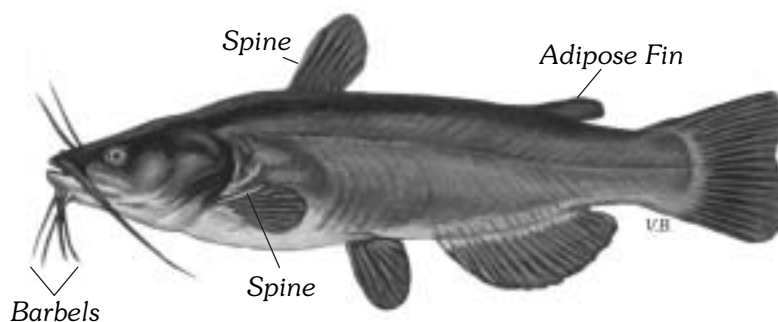


# ... and Out

## Largemouth Bass



## Brown Bullhead



## Sensory Organs

**Eyes . . .** Fish can move their eyes in opposite directions.

Some fish have well-developed sight, while others depend on other senses, especially if they live in murky water.

**Smell . . .** All fish have nostrils, and most have a good sense of smell. Smell is excellent in fish that have poor eyesight, like catfish.

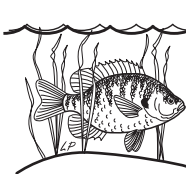
**Hearing . . .** Fish have ears, but they are located inside the body of the fish. Some fish use these ears for hearing, but they are mostly used for balance. Fish also have a lateral line located along each side of their bodies. This organ senses pressure changes and vibrating sound caused by things like the movement of another fish or the splash of a lure.

**Taste . . .** Fish have taste buds in their mouths and on the outside of their bodies. Catfish and bullheads have taste buds on their whiskers (barbels) and skin, so they can taste before they even take a bite!

## Protective Coverings

Most fish have scales for protection. Some scales are large, like those on the carp, while other scales are very small, like those on the trout. Sturgeon have thick bony plates that act like a coat of armor. Catfish and bullheads rely on their thick, tough skins for protection.

A coat of slime covers most fish for added protection from disease, fungi and parasites. When practicing catch and release, anglers should wet their hands to minimize removal of this slime.



Fish do not have eyelids, and therefore, do not blink. The purpose of blinking in mammals is to spread moisture over the eyes. Since fish live in water, they have no need for this adaptation.

# Classified Information

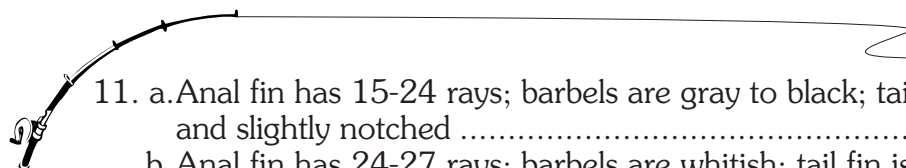
Scientists use dichotomous (die-cot-o-mus) keys to classify and identify everything from plants to bugs to fish. Choose a fish from the *Wisconsin Wildcards* collection to key out. (Hint: Only cards with a are represented on this key.) Start with the first pair of characteristics. Work your way step by step through the key until you have identified your fish. You can make a key of your club

members or classmates. Remember to give two choices for the same characteristic in each pair of statements. Start with broad distinctions and work toward specific differences.

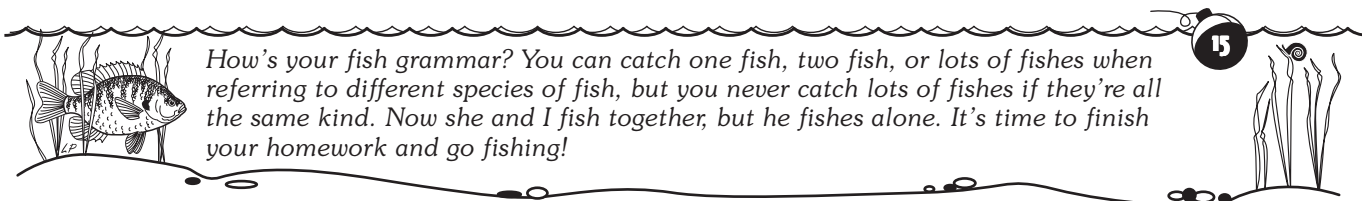


## A Key to Common Wisconsin Fish

1. a. Body has no large bony plates ..... Go to #2.  
b. Body has several rows of large bony plates.  
Face has whiskers (barbels) and a sucker-like mouth ..... ⇨ **Lake Sturgeon**
2. a. One dorsal fin; **no** adipose fin ..... Go to #3.  
b. Two dorsal fins that may be separated or joined and have distinct spines  
and soft rays; **or** may have one dorsal fin **and** an adipose fin ..... Go to #7.
3. a. Dorsal fin is short, much less than half the body length ..... Go to #4.  
b. Dorsal fin is nearly half the body length or longer ..... ⇨ **Bowfin**
4. a. Teeth are very visible and sharp ..... (Pike Family) Go to #5.  
b. Teeth are not visible; mouth is fleshy and sucker-like ..... ⇨ **White Sucker**
5. a. Tips of tail fin are rounded ..... Go to #6.  
b. Tips of tail fin are pointed ..... ⇨ **Muskellunge**
6. a. Cheek and gill cover fully scaled ..... ⇨ **Grass Pickerel**  
b. Cheek and only upper half of gill cover are scaled ..... ⇨ **Northern Pike**
7. a. Adipose fin present ..... Go to #8.  
b. Adipose fin absent ..... Go to #19
8. a. Whiskers (barbels) are present ..... Go to #9.  
b. Whiskers are absent ..... Go to #13.
9. a. Tail rounded or slightly indented ..... Go to #10.  
b. Tail deeply forked ..... ⇨ **Channel Catfish**
10. a. Lower jaw does not protrude beyond upper jaw ..... Go to #11  
b. Lower jaw protrudes beyond upper jaw. Body has patchy,  
mottled markings ..... ⇨ **Flathead Catfish**

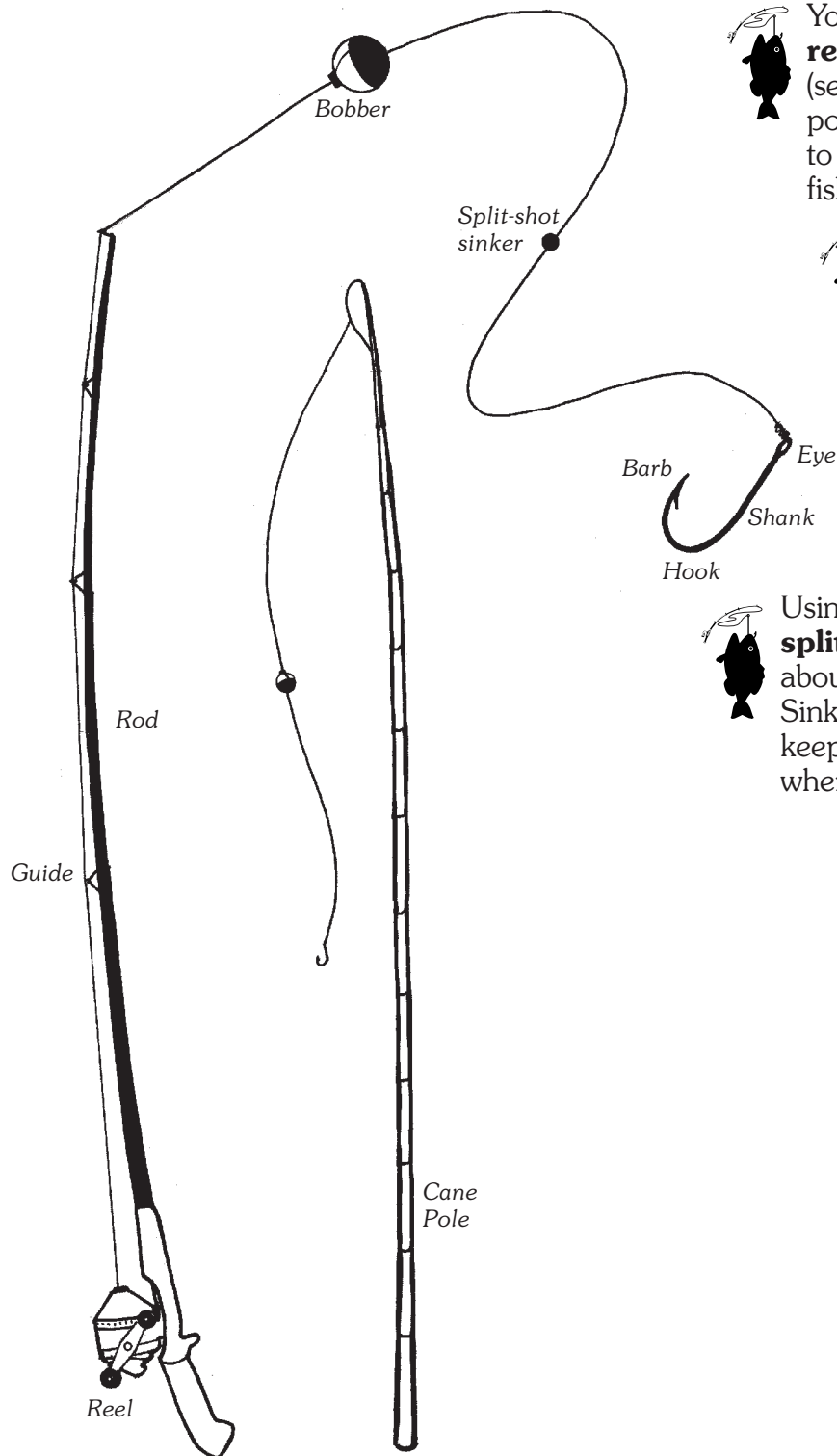
- 
11. a. Anal fin has 15-24 rays; barbels are gray to black; tail fin is squarish and slightly notched ..... Go to #12  
 b. Anal fin has 24-27 rays; barbels are whitish; tail fin is rounded ⇨ **Yellow Bullhead**.
12. a. Side is mottled; pectoral fin spine has strong saw-like “teeth” ..... ⇨ **Brown Bullhead**  
 b. Side is not mottled; pectoral fin spine is “toothless” or has poorly developed “teeth” ..... ⇨ **Black Bullhead**
13. a. Tail is deeply forked ..... Go to #14.  
 b. Tail only slightly forked or is not forked ..... Go to #16.
14. a. Mouth is not turned down ..... Go to #15  
 b. Mouth is turned down ..... ⇨ **Lake Whitefish**
15. a. Back and sides have densely-mottled marking pattern ..... ⇨ **Lake Trout**  
 b. Back and sides not densely-mottled (have scattered spots instead) ..... ⇨ **Coho Salmon**
16. a. Back lacks worm-like markings; lower fins lack white edge ..... Go to #17  
 b. Back has worm-like markings; lower fins have white edge ..... ⇨ **Brook Trout**
17. a. Lower fins are not speckled ..... Go to #18  
 b. Lower fins are speckled ..... ⇨ **Chinook Salmon**
18. a. Lateral line is pink and prominent ..... ⇨ **Rainbow Trout**  
 b. Lateral line not pink or prominent ..... ⇨ **Brown Trout**
19. a. Anal fin has two or fewer spines on leading edge ..... (Perch Family) Go to #20.  
 b. Anal fin with three or more spines on leading edge ..... (Sunfish Family) Go to #22.
20. a. Teeth are not noticeable; tail lacks white tip ..... Go to #21.  
 b. Teeth are very large; tail has white mark on lower tip ..... ⇨ **Walleye**
21. a. Dorsal fin is polka-dotted ..... ⇨ **Sauger**  
 b. Dorsal fin lacks polka dots ..... ⇨ **Yellow Perch**
22. a. Anal fin has four or more spines ..... Go to #23.  
 b. Anal fin has three spines ..... Go to #24.
23. a. Body is silver with random black scales ..... ⇨ **Black Crappie**  
 b. Body is not silver; black scales form lateral rows of spots ..... ⇨ **Rock Bass**
24. a. Mouth is very large; back of upper jaw extends to below or beyond eye ..... Go to #25.  
 b. Mouth is very small, back of upper jaw does not extend to eye ..... Go to #26.
25. a. Tip of upper jaw extending beyond eye ..... ⇨ **Largemouth Bass**  
 b. Tip of upper jaw not extending beyond eye ..... ⇨ **Smallmouth Bass**
26. a. Red spot is present at tip of gill flap ..... ⇨ **Pumpkinseed**  
 b. Gill flap is all black ..... ⇨ **Bluegill**

Adapted from a fish key by WDNR Fisheries Biologist Steve Gilbert





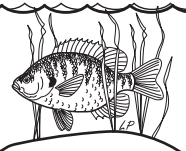
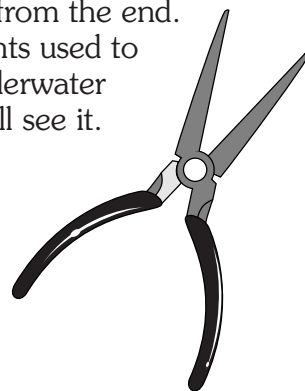
# Get Ready to Go Fishing!



You can use a **cane pole**, a **rod and reel**, or a **pop can rig** to catch fish (see page 20 to learn how to make a pop can rig). The cane pole is simple to use, but the rod and reel let you fish at a greater distance from shore.

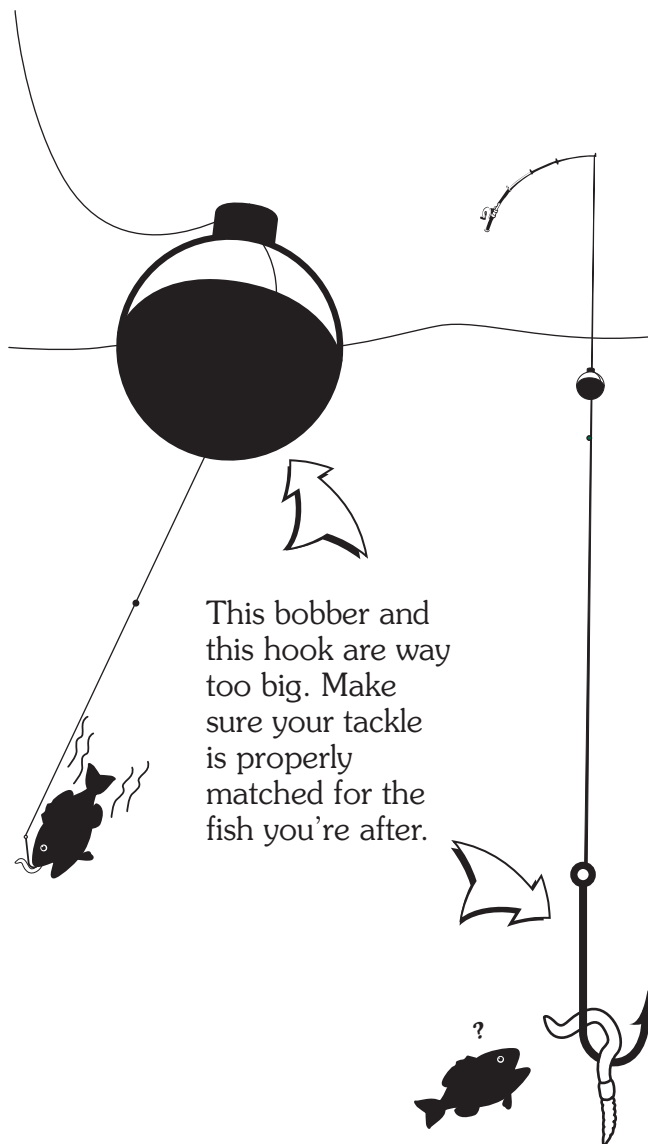
The **line** must be strong; use 6- to 10-lb. test. If you're using a cane pole, the line should be as long as the pole plus your arm's length. Tie the line to the guide at the end of the pole. If you're using a rod and reel, thread the line straight through each guide on your rod.

Using **pliers** (not your teeth!), fasten a **split-shot sinker** to the line about 10 inches from the end. Sinkers are weights used to keep the bait underwater where the fish will see it.

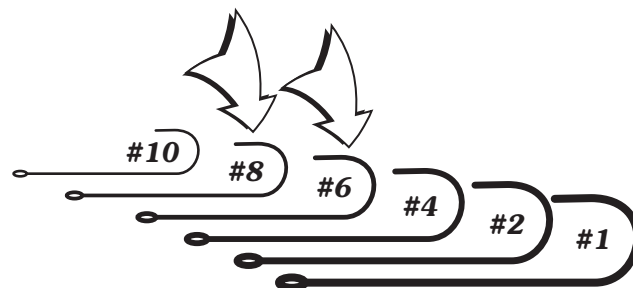


# Get Organized!

Attach a **small bobber** to the line above your sinker by pushing down on the button and clamping it to the line. The distance between the hook and the bobber determines how deep you fish. To change the depth of your bait, change the position of your bobber. If your bobber sinks, either it has a leak or you need to put on a smaller sinker. The bobber will move or go under water when a fish is biting.

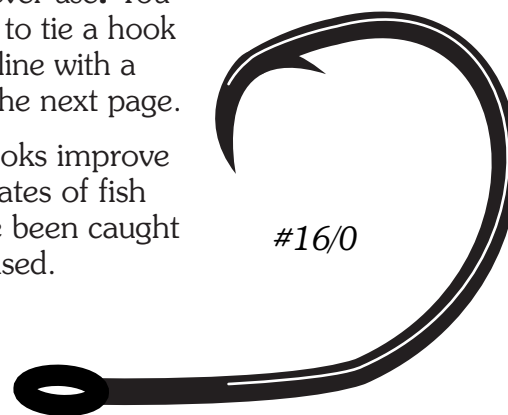


**Hooks** are numbered by size. The smaller the number, the bigger the hook until you get to Zero. There are no Zero size hooks or negative numbers, but there are the 0's, pronounced "oh" or "naught". So you have 01, 02, 03, etc. with the numbers getting bigger along with the hook.



A hook like the one in this picture would be good to use; it's the size of a No.8. A No. 6 is bigger than a No. 8, but an 08 is bigger than an 06. Got it? It's better to buy a package of hooks of the same size that you will use, rather than a wide assortment with many hooks you aren't likely to ever use. You will learn to tie a hook onto the line with a knot on the next page.

Circle hooks improve survival rates of fish that have been caught and released.



**Take care of your fishing gear and it will last a long time.**

Sporting goods store owners want to help make sure you get off to a good start and can help you select the equipment that's right for you.

# Tie a Knot - It's Easy!



Every angler has a favorite knot. Pick one knot and learn it so well you can tie it behind your back. Then try another.

## Trilene®



The trilene has an extra loop in the hook eye.



For all knots, wet the line before securing the knot.



Anglers often keep a line clipper on a lanyard around their necks so they can quickly clip the line and change lures.



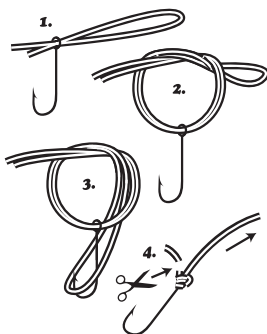
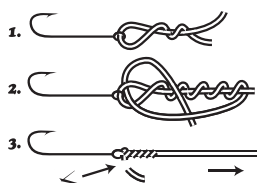
## Better Knot

### How strong is your knot?

Fishing line breaks at its weakest point, usually just above the knot. With a partner, conduct an experiment to find the ideal number of wraps to make a strong knot. This experiment works best with the improved clinch knot, but you can try it with others.

1. Each partner will need a knot tester. You can make a knot tester by twisting a small screw eye bolt into a wooden clothespin.
2. Draw a random number from the chart on page 19. This number is the number of times you will wrap your line on your first test knot. Your partner will draw a different number.
3. Each partner will tie one end of the same piece of fishing line to a knot tester with his or her knot using the random number of wraps.
4. Pull steady until one of the knots breaks. Record the number of wraps on the chart below and note the "wins" with a "w" in the little boxes. If the line breaks (not at the knot), record the trial as a draw.
5. Follow the instructions on page 19 to determine your next number. Do five trials.

## Improved Clinch Knot / Palomar knot



In the Palomar knot, let the hook hang loose and tie an overhand knot in the doubled line – sort of like you're tying your shoe.

Name	Trial 1 Number of Wraps	Trial 2 Number of Wraps	Trial 3 Number of Wraps	Trial 4 Number of Wraps	Trial 5 Number of Wraps

Do more wraps mean a stronger knot? Why or why not?

Why would one knot break before another with the same number of wraps?

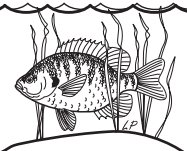
Why are experimental results more accurate when more trials are conducted?

Compile and graph all the data from your group. What is the winning number of wraps overall for the group? Which is the better knot?

*Adapted from Go Fish IN, Indiana Division of Fish and Wildlife.*



Line strength refers to the minimum weight at which line breaks. Old fishing line gets brittle and weak. Knots and nicks also weaken line, so active anglers replace their line often.





# Test Your Knot

## Random Number Chart

4	4	3	1	1	4	5	7	4	3	9	4
5	8	9	6	8	8	4	2	8	8	5	5
9	1	6	1	1	7	7	6	6	10	4	1
6	9	1	9	5	4	9	9	9	5	7	5
8	8	5	6	2	7	7	3	2	4	5	8
7	6	3	8	7	5	9	9	8	5	7	5
8	8	7	3	7	9	4	1	8	7	4	8
1	10	4	6	1	4	9	4	7	2	4	3
8	10	4	2	6	3	3	4	9	4	7	1
4	6	5	5	6	10	7	6	7	9	4	8
10	2	6	1	6	9	5	5	8	8	4	2
2	3	6	7	4	3	2	7	7	2	6	9
6	2	9	7	9	2	4	10	8	4	6	6
10	6	3	6	4	6	7	9	3	6	7	7
1	4	2	7	8	3	5	6	8	1	3	2
9	6	4	9	4	2	6	3	3	3	1	2
5	2	6	2	5	3	8	5	3	9	9	9
6	4	6	2	3	7	3	9	3	3	9	7
4	6	9	4	4	4	7	3	2	4	5	2
10	6	5	10	4	10	10	7	3	3	2	4

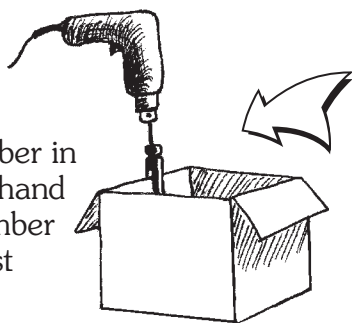
These numbers were selected randomly by a computer. Scientists use random numbers to eliminate bias, or the tendency to choose some numbers more often than others. Do you have a “favorite” number?

### How to use the Random Number Chart

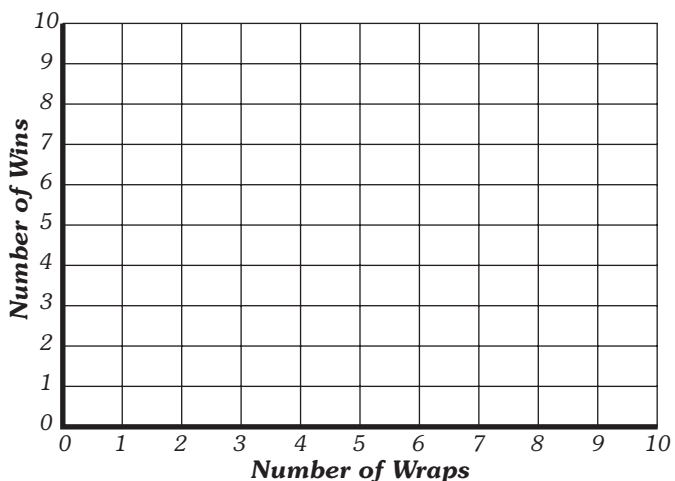
1. Close your eyes and point to a number on the chart.
2. Use that number in the first trial in your experiment.
3. Use the number below your first for your next trial and so on.

If you are at the end of a column, go to the top of the next column to the right.

If you are at the number in the very lowest right hand corner, go to the number in the very uppermost left-hand corner.



## Better Knot



### Better Knot Class Data and Column Chart

Number of Wraps	Number of Wins
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

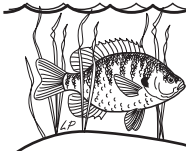
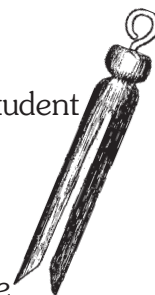
## How to make a knot tester:

### Materials

- 1 old fashioned-style clothespin for each student
- 1 metal screw eye bolt for each student
- drill
- 1/16" drill bit
- cardboard box

1. Use the cardboard box to hold the clothespins in place while you drill the hole.
2. Drill the pilot hole.
3. Twist the screw eye bolt into the pilot hole.

Adapted from Go Fish IN, Indiana Division of Fish and Wildlife.



Sturgeon were once so plentiful in the Mississippi River that they destroyed the nets of commercial fishermen. To deal with this problem, sturgeon were tossed on the sandbars of the river, allowed to dry and burned as fuel by riverboat pilots.

# Make Your Own Equipment!

## Pop Can Fishing

You don't need a lot of fancy or expensive equipment to fish. Once you learn how to tie a fishing knot and attach a split-shot sinker and bobber, you can make your own rig with an empty pop can.

### To make a pop can rig, you'll need:

An empty pop can

Masking tape

6- to 10-lb. fishing line  
(30 wraps around the can is equal to about 6 arm's-length pulls from a spool of line)

A hook

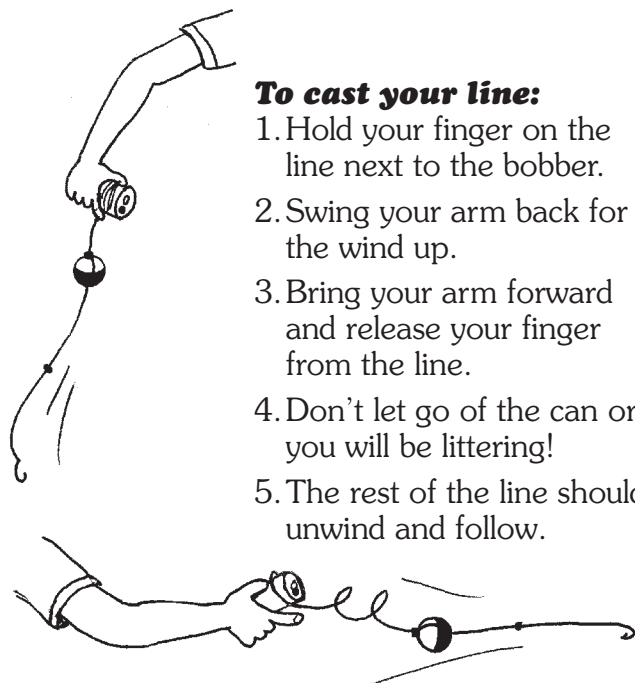
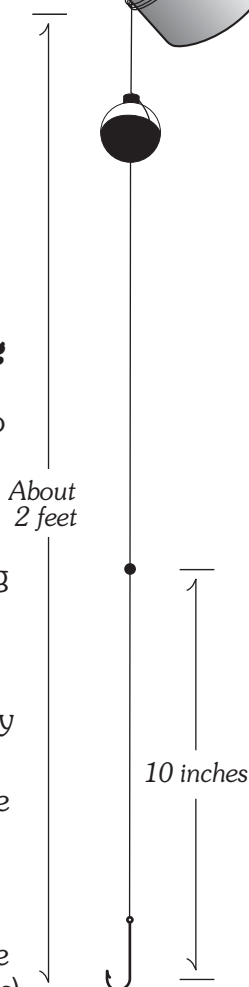
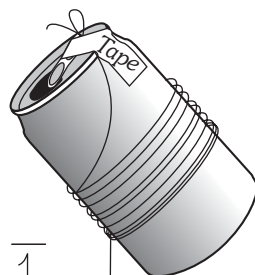
Split-shot sinkers

A bobber

Fingernail clippers to cut the line

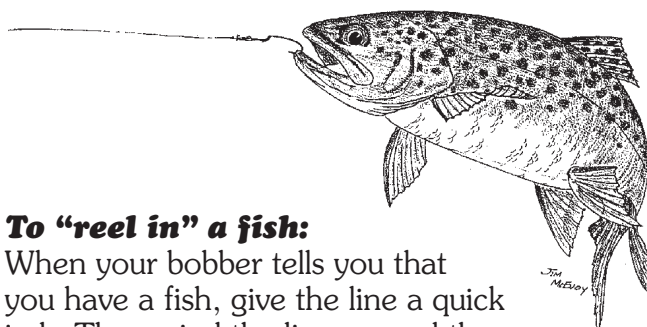
### Build your pop can rig like this:

1. Tie the end of the line to the pull-tab, or around the can, with a knot.
2. Securely and smoothly tape the knot and fishing line near the top of the pop can. If the tape is rumpled, it will catch on the line. (You can also try it without the tape.)
3. Wrap the line around the pop can until you reach the last two feet of line.
4. Attach the bobber, split-shot sinker and hook (see page 16-17 for directions).



### To cast your line:

1. Hold your finger on the line next to the bobber.
2. Swing your arm back for the wind up.
3. Bring your arm forward and release your finger from the line.
4. Don't let go of the can or you will be littering!
5. The rest of the line should unwind and follow.



### To "reel in" a fish:

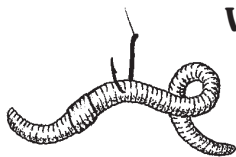
When your bobber tells you that you have a fish, give the line a quick jerk. Then wind the line around the can, keeping it tight until you can grab the fish.



# Baiting Your Hook



**Be careful not to bait your hook with your finger!**



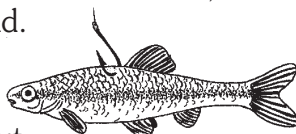
**Worms** are a favorite fish bait. Dig for them in wet, rich soil. Keep worms fresh in a covered container with damp soil or shredded newspaper.



When fishing for catfish or bass, hook a whole worm in the middle, leaving the end free to wiggle.

For sunfish and other bait-stealers, hook bits of worms at the end.

**Minnows** used for bait are usually about one to three inches long. Put the hook through the very top of its back, just in front of the fin so that the minnow can swim. You will probably want to buy your minnows.

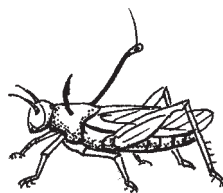
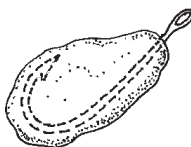


*It is illegal to dump minnows into the water; you might be introducing an exotic. Nightcrawlers are a concern in Wisconsin woods where they are changing the ecology of the forest floor. Share your extra bait with another angler, instead of dumping it.*

**Keep your bait in the shade.**



**Dough balls** are the best bait for carp. You can make them with flour, bread, cornmeal, or flaky cereal, dampened with water and honey. Press them into tight little balls around a fishhook, take off your bobber, and drop your bait to the bottom with a big sinker.



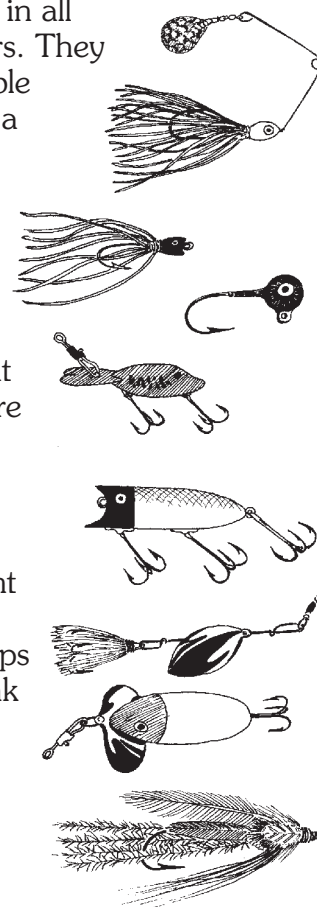
**Grasshoppers and crickets** are good summer baits you can find in fields and lawns. Slip the hook through the collar just behind their necks; this will keep them lively to attract a fish.

**Artificial lures** come in all sizes, shapes and colors. They are designed to resemble natural fish food, grab a fish's curiosity or just make a fish mad enough to bite it. A good rule of thumb is to buy or make one lure at a time and perfect your use of that lure before getting more - unless you just like to collect things.



**Get artsy!**

You can paint your own lures. Some tackle shops sell special paints, blank jig heads and parts to make lures.

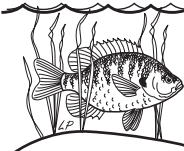


Jim McEvoy



*Is your bait legal?*

*Not all baits and lures are legal everywhere or all the time. Check the fishing regulations to be sure. People are sometimes tempted to use crayfish for bait, but they're not legal in inland waters, so read those **regs!***



*Minnows are not baby fish, but a family of small fish. There are 54 species of minnows in Wisconsin; 13 are endangered, threatened, or listed as a species of concern.*





# Cast it Out, Reel 'em In!



John Miller



Your rod, reel and line are ready and your hook is baited. Now it's time to find out if the fish are hungry. Before you cast, look around you to make sure no one is nearby. Also, look behind for trees and bushes and above for power lines. Make sure your line isn't wrapped around the tip of the rod.

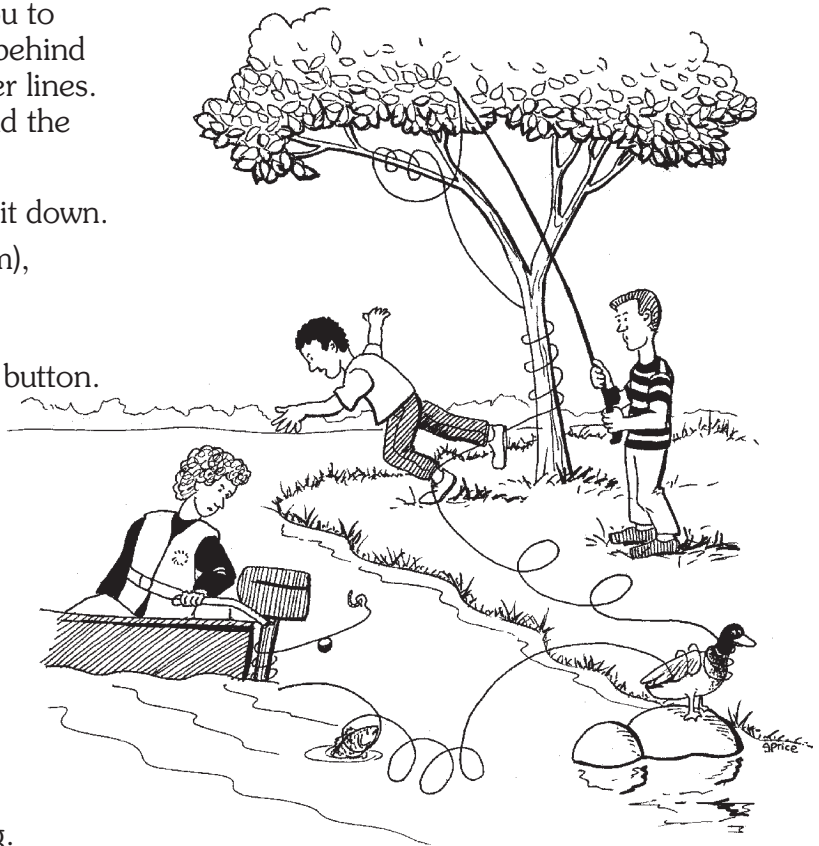
1. Press the button on your reel and hold it down.
2. Using wrist action (not your whole arm), gently bring the rod straight up over your shoulder.
3. Bring the rod forward and release the button.

Turn the crank forward until it clicks to keep more line from coming out. Reel your line in until your bobber moves; this takes up the slack. When a fish bites, jerk the line quickly to "set" the hook in the fish's mouth.

## Don't get yourself in a tangle!



Loose line can trap and injure fish and wildlife. Recycle old fishing line. Some tackle shops collect it for recycling.



### **Shops near me that collect old line:**

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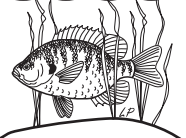
### **Companies that collect old line:**

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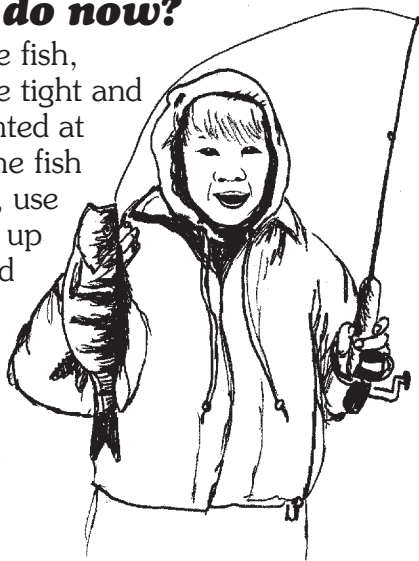
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# **I Have a Fish! I Have a Fish!**

## **What do I do now?**

Slowly reel in the fish, keeping your line tight and your rod tip pointed at the sky. When the fish is close to shore, use a net to scoop it up or lift the rod and gently grab your catch under its belly. Be careful to grasp the fish so its fins lie flat.

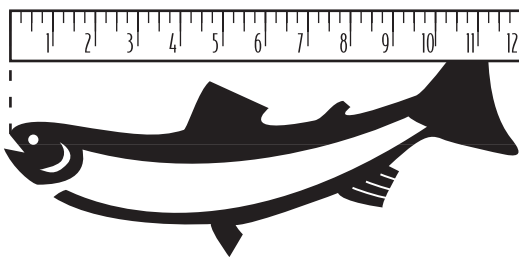


Hold the fish under its belly and use a needle-nose pliers to gently remove the hook. If you can't see the hook, cut the line. Sometimes a special hook remover is handy for deeply hooked fish.

Use barbless hooks to reduce the chance of injuring fish. You can buy them or make your own by filing down the barb or pinching it shut with a pliers.

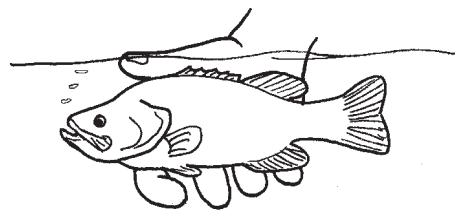
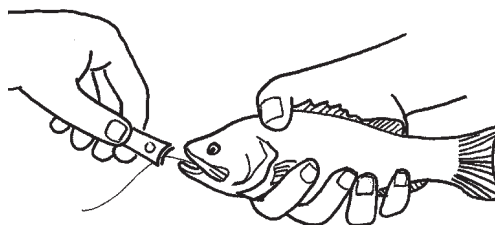
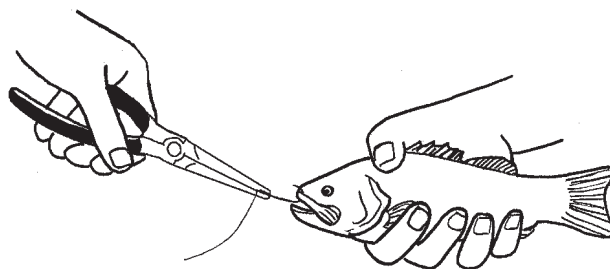


The longer you keep your fish alive, the fresher it will be to eat. Thread a **stringer** under the chin and through both lips. Then, tie the other end to a low branch to let the fish swim in the water. You can also put fish in wire baskets and plunge them in the water, or keep them in an ice chest in the shade.



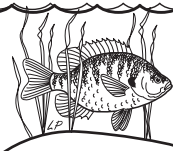
## **Catch and Release?**

Is the fish big enough to keep? Are you and your family going to eat it? If not, gently slip it back into the water as quickly as you can. If the fish is deeply hooked and not of legal size, cut the line. **Wet your hands** before handling fish so you don't remove too much of the fish's protective slime.



## **Measure fish from the tip of the nose to the tail.**

Any fish you do not **immediately** release counts toward your daily bag limit, even if you release it later. Remember that it is illegal to sort fish; that is, to exchange a smaller fish on the stringer with a larger fish you catch later.



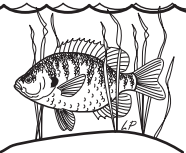
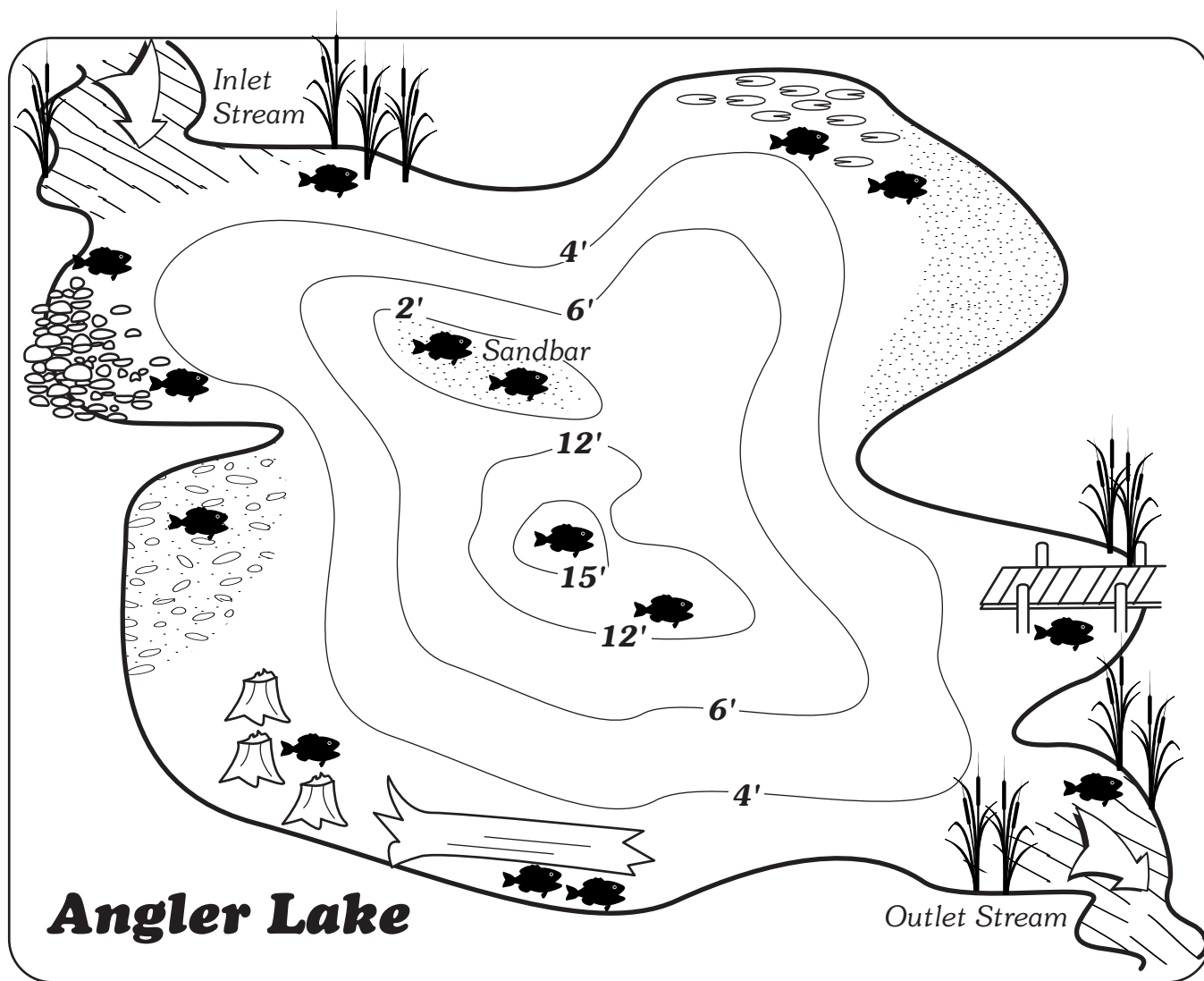
Musky anglers voluntarily release over 98% of the muskellunge they catch, resulting in higher survival rates of the fish and better fishing for everyone. Since musky live for over 30 years, the fish you release could grow up to be the next state record and be caught again!

# Reading the Water

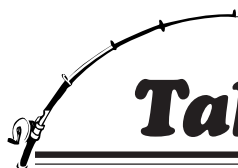
What you see above the water provides clues as to what you might catch below. In fishing lingo, fish habitat is called “structure.” Rocks, stumps, submerged trees, plants, drop-offs, points and riffles are all places where fish like to hang out. Breaks, or areas where the bottom changes - from weed to sand, sand to gravel - are popular with fish, too. Many fish like to cruise the weedline for a meal. In rivers,

fish rest out of the current in deep holes or behind rocks. Lake maps, available at tackle shops, can help you locate drop-offs and sandbars where fish congregate.

Docks also provide some structure, but too many big docks block the sunlight necessary for plant growth. Fishing clubs can work with the Department of Natural Resources to improve fish habitat and provide good structure.







# Take Note!



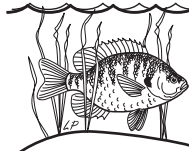
Many anglers keep a fishing log or journal to record their fishing memories. You can use a simple spiral notebook or a stylish hardcover journal. What you put down on the pages is what really counts. The

more detail you include in your journal the more valuable it will be to you as you learn which techniques work and which don't. Photos, illustrations, wildlife observations and notes about plants in bloom will make your journal more interesting to read in the future.

<i>Fishing Log - Date: 8/14/2005</i>		
<i>Location: Green Lake - Blackbird Point &amp; in front of church</i>	<i>Species: Largemouth bass</i>	<i>Yellow perch</i>
<i>Time: 6am</i>	<i>Size: 18"</i>	<i>7-10"</i>
<i>Temperature: 72°</i>	<i>Bait/Lure color: spinner</i>	<i>worms/yellow jig</i>
<i>Weather:</i>	<i>Number: 1</i>	<i>8</i>
<i>Sky: Partly Cloudy</i>	<i>Method: casting</i>	<i>still-fishing</i>
<i>Wind: SW, slight breeze</i>	<i>Depth: 10'</i>	<i>5'</i>
<i>Precipitation: none, hard rain night before</i>	<i>Structure: weeds</i>	<i>pier</i>
<i>Water Color: greenish, lots of floating pollen</i>	<i>Bottom type: silty</i>	<i>sand, silt</i>
<i>Current: none</i>	<i>Stomach contents: crayfish</i>	<i>dragonfly nymph</i>
<i>Waves: calm</i>	<i>Other observations: jewelweed in bloom, lots of blackbirds, brother fell off pier and startled brood of ducklings.</i>	



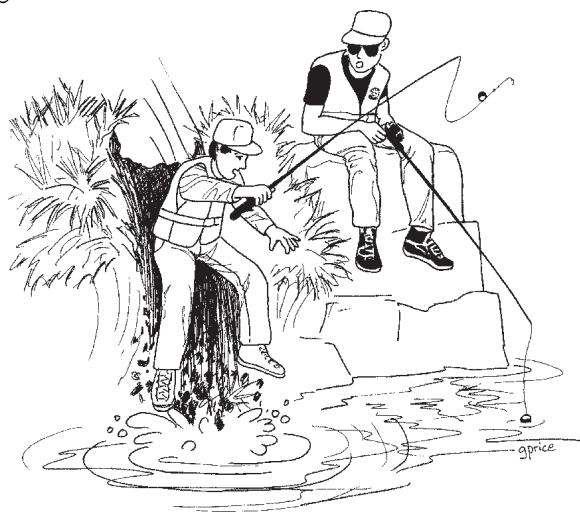
Got a whopper to share?  
Send your fish tales to EEK,  
Environmental Education  
for Kids at [EEK@dnr.wi.gov](mailto:EEK@dnr.wi.gov),  
and they'll get posted on the DNR's Web site.



The Wisconsin Phenological Society studies the "relationship between the stages of plant growth and animal life and physical factors of the environment, particularly weather and climate". Check out their Web site at [www.naturenet.com/alnc/wps/](http://www.naturenet.com/alnc/wps/).



# Safety & Courtesy Near the Water



**Remember the rule for helping a drowning victim.**

**Reach** with an object, **Throw** an object that floats, **Row** to the victim, **Go** get help.

**NEVER jump in the water to help a person who is drowning.**

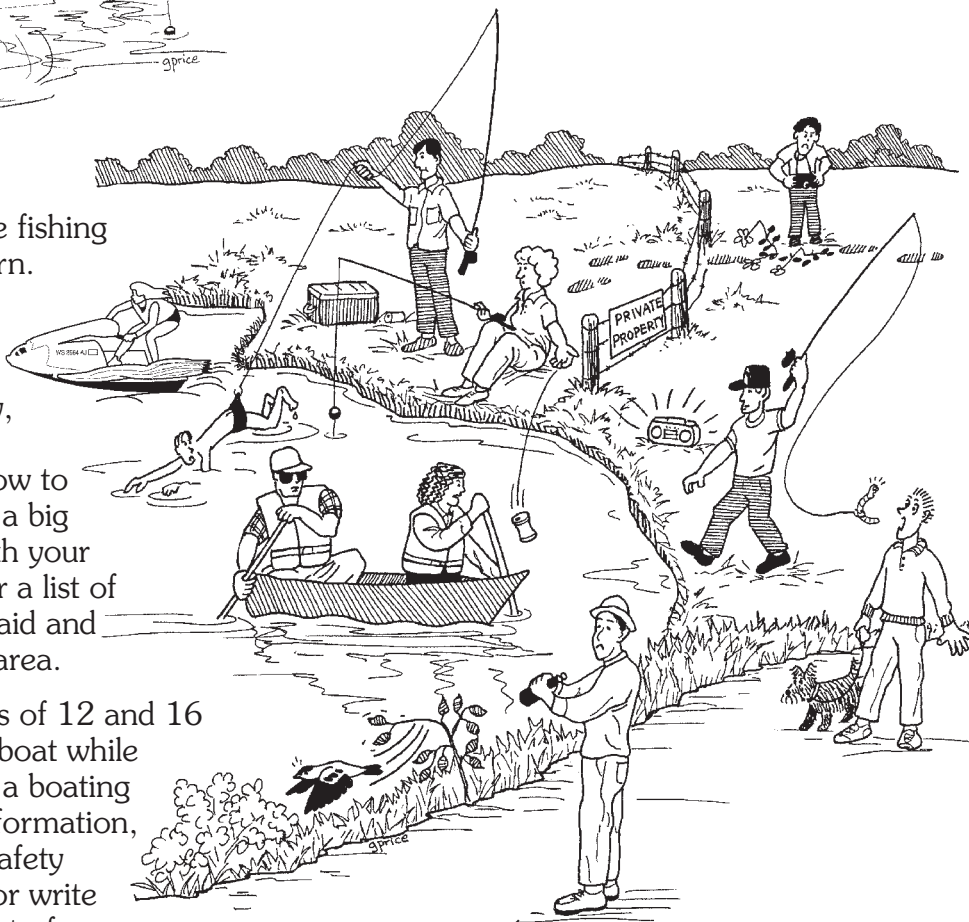


Always fish with a **buddy**. Let an adult know where you'll be fishing and when you'll return.

Test the banks for stability and watch out for deep holes if you're wading in a stream. Most importantly, when in or near the water, wear a life jacket. Learn how to swim if water activities are a big part of your life. Check with your local Red Cross chapter for a list of organizations holding first aid and swimming lessons in your area.

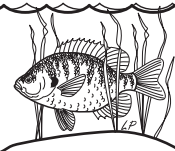
If you are between the ages of 12 and 16 and you plan to operate a boat while fishing, you'll need to take a boating safety course. For more information, contact the DNR boating safety officer at 608/266-0859 or write Boating Safety, Department of Natural Resources, P.O. Box 7201, Madison,

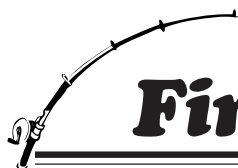
WI 53707-7201. You can also check out the DNR Web site, [dnr.wi.gov](http://dnr.wi.gov), and click your way to "Boating" for more information.



## Be a good sport!

Many people use our lakes, rivers and streams in many different ways. What can people do to keep the outdoors enjoyable for everyone?





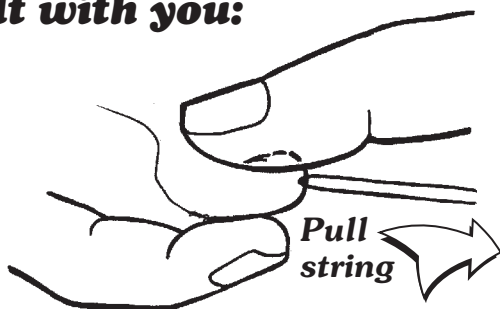
# First Aid for Anglers



J. Miller

One of the most common fishing accidents is getting stuck with a fish hook. If only the point of the hook is stuck, just pull it out. If the hook goes in past the barb, the wisest thing to do is to have a doctor remove it. If you are in a remote area, far from a doctor, have an adult remove the hook.

## Here are some tips for the adult with you:



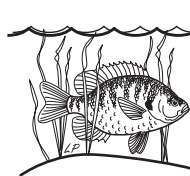
1. Promise to buy the patient a chocolate malt as soon as you get to town.
2. Loop a string around the shank of the hook.
3. Push down on the eye and pull the string straight out. The barb should come out the way it went in.
4. Flush the wound with hydrogen peroxide and advise the parents to have the child get a tetanus shot if he or she hasn't had one in the last 10 years (five, if the wound is particularly deep and dirty).

Most youth up to the age of 12 are protected against tetanus if they are up-to-date on their immunizations.



## Watch out for the sun!

Be sure to apply sunscreen. Wear a long-sleeved, light-colored T-shirt, **wide-brimmed hat** and **sunglasses** to protect your skin and eyes from the sun's harmful rays. Remember that your body needs lots of **water** on hot days. Soda pop increases the loss of water from your body, so good old H<sub>2</sub>O (plain water) is best.



Keep your hands free of insect repellent and sunscreen, as their scents repel fish. Bug dope can dissolve plastic lures and tackle boxes, not to mention what it can do to you if you used it improperly. Follow the manufacturer's instructions on the package or learn to swat!



# Fish for Dinner!

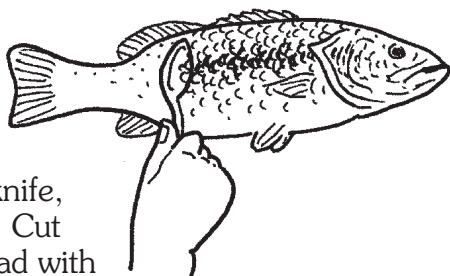
It's fun to learn to clean and cook your fish. Ask an adult for help and be careful with the knife. Keep cleaned fish ice-cold.

## Scaling

For most fish, you'll want to remove the scales if they are not skinned.

### To scale fish:

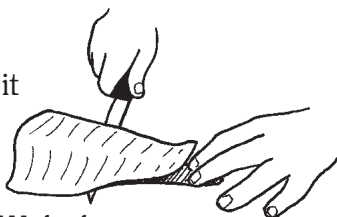
Hold the fish by its tail and scrape from tail to head with a fish scaler, butter knife, or tablespoon. Cut around the head with a sharp knife.



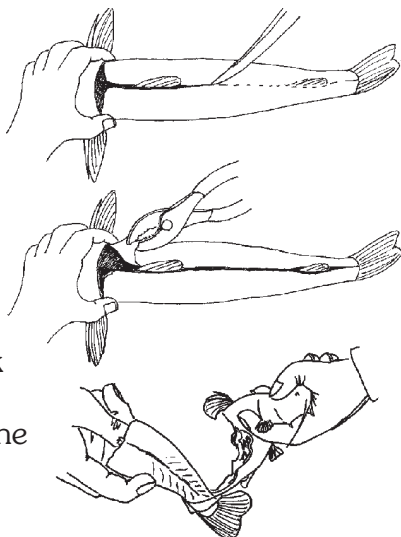
Remove the head and insides.

## Skinning

Skin a fillet by placing it skin-side down on the cutting board. Start at the tail and keep a tight grip on the skin. With the knife at an angle, saw the flesh off the skin.



Catfish and bullhead have tough skins and you need a pliers to pull them off. First, cut around the head with a sharp knife, then pull the skin back with the pliers. Finally, remove the head and insides.



## Filleting

Always cut away from yourself.

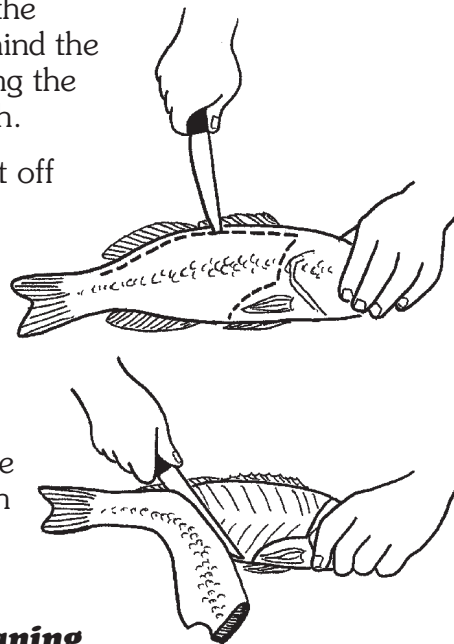
### To make boneless fillets:

Cut down to the backbone behind the head and along the side of the fish.

Slice the meat off the bones.

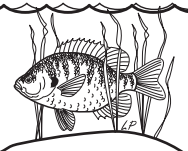
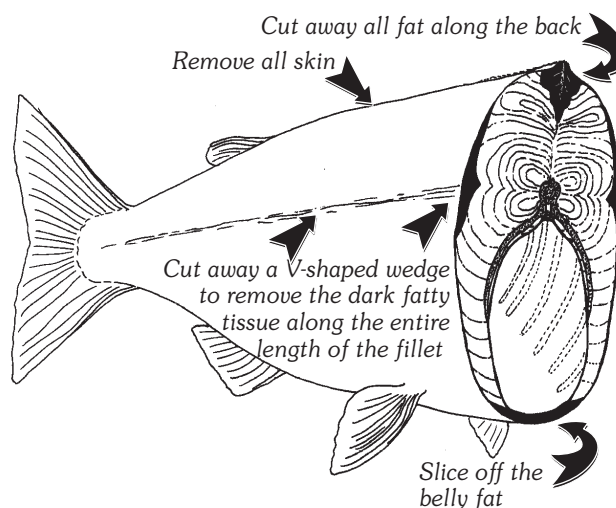
Turn the fish over and repeat.

The cheek meat just behind the eye is a delicacy in some households.



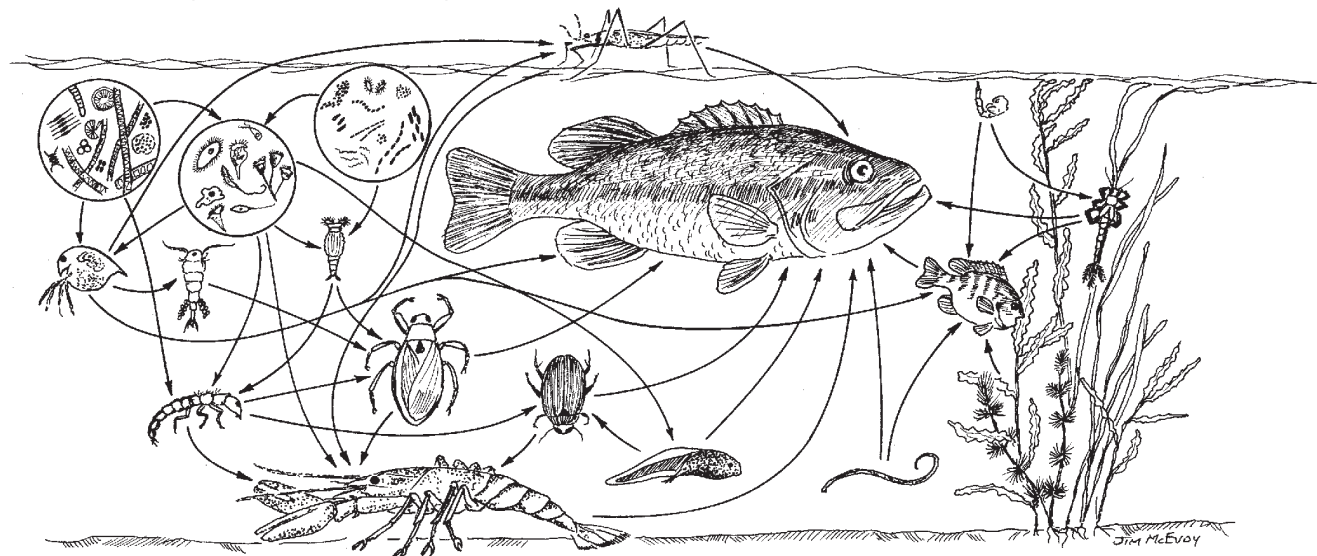
## Proper Cleaning

Trimming fat reduces your intake of PCBs, which accumulate in fatty tissue. Mercury accumulates in muscle tissue, the part you eat, so limit your consumption. See next page for more details on mercury and PCBs.



# Hook into Healthy Fish!

## Fish are part of complex food webs



## Reel in the facts about mercury and PCBs in fish

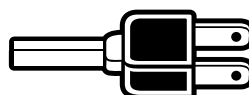
Fish are fun to catch and good to eat. High in protein and low in fat, they're good muscle-building foods for growing bodies. But, it's possible to get too much of a good thing. Most fish in Wisconsin waters contain low levels of mercury. Some fish have higher mercury levels, plus polychlorinated biphenyls (PCBs), so care must be taken in preparing them for the table. The benefits of eating fish outweigh the health risks as long as you follow guidelines on how much fish to eat. See *Choose Wisely - A Health Guide for Eating Fish in Wisconsin*, DNR Pub-FH-824, to help you limit your exposure to mercury and PCBs, or check out our Web site at [dnr.wi.gov](http://dnr.wi.gov).

### Contaminants bioaccumulate (build up) in the food chain. Here's how:

- Contaminants enter the water.
- Small organisms absorb contaminants in the water.
- Small fish eat the contaminated organisms.
- Big fish eat small fish.

## Turn off the light!

Mercury is released into the air by coal-fired power plants and drops back down into our lakes and streams.



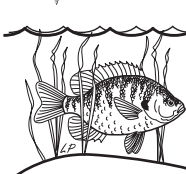
## Pull the plug!

Quick-start or "instant-on" appliances continuously draw current or use electricity.

Leaving on lights and unnecessary appliances not only wastes energy, but increases the risk of mercury contamination. What else can you do to help limit mercury in the food chain?

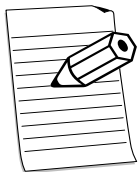


**Turn in mercury-containing items like old thermometers to local hazardous waste collection sites and use newer alternatives.**



Polychlorinated biphenyls (PCBs) were used in the manufacture of electrical transformers, carbonless paper and hydraulic fluids. Though banned in 1976, PCB-laden sediments are still found in the Great Lakes and rivers that served as industrial sewers.

# What Can You Find in a Lake?



## A Pollution Solution

You never know what you'll catch in *this* lake! It's been littered and polluted with things that could harm native fish and wildlife. Fish out (circle) the words and draw a line through the ones that should not be in the water.



### Words to find

Bait	Minnow
Bass	Oil
Bluegill	Paper
Boat	Pole
Bobber	Reel
Bottles	Rod
Cans	Shoe
Carp	Sinker
Catfish	Ski
Coat	Soap
Dough ball	Tires
Fish	Toads
Float	Trash
Frog	Tree
Grasshopper	Water
Hooks	Wire
Line	Worm
Lures	

F E R J P R E T A W M A S K  
 R E P P O H S S A R G P Q A  
 E C O G T B S C H O O K S A  
 E X L D H I K P B D S V Z S  
 L N E J N C A T F I S H T E  
 F Y C K F F C B I M Q S U L  
 I E E N L L A B H G U O D T  
 S R W E S O S O B A S S W T  
 H U K X O A T B L O K E C O A T  
 G B B O A T R B U H T P M B S R  
 L T L L P G N E E E L F R O G A  
 W I H T S R G R G K I T O A D S  
 O P T I R E S M I N N O W P C H  
 B N F C G E T T L X E E Y C A  
 I T P A P E R K L U R E S X N  
 O I M N O I E I O I T W E S S  
 B T K S H O E F W E  
 H E I S L P G T U N



## Thanks for helping to clean up Mixed Bag Lake! You've made it a better place to fish.

The Department of Natural Resources tries to protect habitat for all animals, but needs your help. Since we all need clean air and water, healthy food, safe shelters, and space to run, protecting habitat is a good idea for everybody.

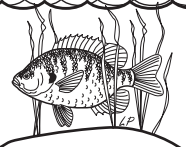
Sometimes natural disasters like floods, droughts and fires change a fish's habitat faster than a fish can change (adapt) to survive in those new conditions. When this happens, fish move away, fail to have offspring or die.

People also change habitat by damming rivers, building too close to the water, removing plants and logs that provide shelter, and polluting food and water supplies.

How is clean water part of your habitat?

## Storm-Drain Stenciling

Educate your neighbors on ways to help keep local waters clean through the Storm-drain Stenciling program. Call the Water Action Volunteer program at 608/264-8948 or call your local UW-Extension office for stenciling kits.





# Regulations Quiz Bowl

## Learn the regulations to avoid citations!

Wisconsin's diverse waters do not lend themselves to a one-size-fits-all approach to fishing regulations. Playing *Regulations Quiz Bowl* can help you become familiar with and understand the fishing regulations. In teams or as individuals, come up with statements or questions and have your fellow anglers page through the regulations booklet to find the answers. The team or individual that thinks they've found the answer raises a hand or rings a bell. When they give the answer, they also note where they found it. Here are some sample questions to get you started.

*True or False? Motor trolling is permitted on the Fox River in Outagamie County.*

*In what years did the Lake Superior Chippewa Tribes cede 22,400 square miles of northern Wisconsin to the United States?*

*When can you fish for bullheads?*

*True or False? You can use gamefish for bait.*

*True or False? A warden may seize your boat if it was used in connection with a violation.*

*How many fish can an able-bodied 18-year-old keep in Greenfield Park on April 3?*

*What's the difference between possession limits and bag limits?*

*What's the size limit for snapping turtles?*

*What is the season for frogs?*

*How many pounds of clams can a person gather in a day?*

The regulations booklet offers other interesting information besides do's and don't's, so take a look.

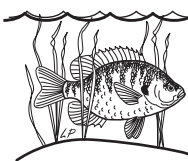
Remind the adults with you that if they help you cast or reel, they are fishing and need a license.

## A Slippery Deal

Something's fishy about *these* fish facts! Solve the riddles; answers below.

1. If fish lived on land, which country would they live in?
2. Which fish can perform operations?
3. What is at the bottom of the lake and shivers?
4. Why are fish so smart?
5. What fish goes up the river at 100 mph?
6. What happens to frogs in a no-parking zone?
7. What's the difference between a fish and a piano?
8. Where do fish borrow money?
9. What fish has the lowest voice?
10. What kind of fish do you find in a bird cage?
11. Where do fish keep their money?
12. Where can you find the most fish?
13. What fish do kids build in their garages?

1. Finland!
2. The sturgeon!
3. A nervous wreck.
4. They live in schools!
5. A motor pike.
6. They get toad away!
7. You can't tuna fish!
8. The loan shark!
9. The bass.
10. A perch.
11. In the river bank.
12. Between the head and the tail.
13. Go - carp.



Do fish "toot"? You bet your beans, but not for the same reason as mammals do! Most fish rely on their swim bladder to stay afloat. As they move up and down, they need to adjust air in their swim bladders to adjust to changing pressure. A duct from the swim bladder in some fish allows for release of excess gas.

# More Fishing Opportunities

## Ice Fishing

### **Fishing is hot when the lakes are cold!**

Fishing doesn't have to stop when winter snaps an icy lid on Wisconsin lakes. Find out more about ice fishing and head out to the nearest ice shantytown! Contact the Angler Education office or any DNR Service Center and ask for *Ice Fishing - What to Know Before you Go*, Publication #FH-751, or contact the University of Wisconsin-Sea Grant for their publication, *Ice Fishing* by Warren Downs.



See EEK for more ice fishing information, [dnr.wi.gov/eeek/](http://dnr.wi.gov/eeek/).



***Thick and blue; tried and true.  
Thin and crispy; way too risky.***

## Fly-fishing - Poetry in Motion

Learning the graceful art of fly-fishing is a life-long commitment. It requires more specialized equipment and skill than spin-casting, and persistent anglers are rewarded. As in spin-casting, the more you fish, the more you learn about fish preferences and behaviors. You also learn to recognize good habitat when you see it and how you can help remedy problems. Several organizations are ready to help you take the next step and make your first cast with a fly rod.

### **We need your help!**

Want to get involved in protecting Wisconsin's lakes and streams? Local conservation and environmental organizations abound throughout our state. Type in a topic on the World Wide Web and you'll be linked to any number of organizations that share your concern.

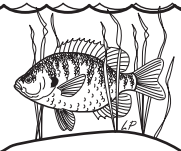
# What Have You Learned?

## **Beginning Junior Angler (Grades 4-6)**

- Assemble basic tackle.
- Tie one fishing knot.
- Cast safely and accurately.
- Identify five species of fish and baits used to catch them.
- Know the name and function of three fins.
- List two fish adaptations.
- Know two fishing safety rules.
- State one fishing regulation and know where to look for more.
- Describe good fish habitat.
- Describe two traits of an ethical angler

## **Advanced Junior Angler (Grades 7-8)**

- Assemble basic tackle.
- Tie two fishing knots.
- Cast safely and accurately.
- Identify at least 10 species of fish and baits used to catch them.
- Know the names and functions of six fins.
- List seven fish adaptations.
- State three fishing regulations and know where to look for more.
- Describe good fish habitat.
- Describe how fishing is important to Wisconsin.
- List four threats to fish habitat and some possible solutions.
- Describe four traits of an ethical angler.



# Glossary

**Adaptation:** the process of making adjustments to the environment.<sup>1</sup>

**Adipose fin:** a soft, fleshy fin found on trout, salmon, catfish and bullheads. Its function is unclear.

**Alien:** exotic, non-native.

**Bag limit:** the maximum number of fish allowed to be taken by an individual in a single day.

**Barbel:** a slender, whisker-like taste receptor on certain fishes such as catfish, bullheads and sturgeon used to find food.

**Bioaccumulation:** the build-up of substances, such as pesticides or other chemicals, in an organism.

**Camouflage:** blending in with the surroundings or hiding, by means of markings, color patterns or posture.

**Carrying capacity:** the number of animals that the habitat in a given area can support.

**Catch and release:** a practice used by recreational anglers where fish are returned to the water after being caught for conservation or ethical reasons.

**Decompose:** the breakdown or recycling of a dead plant or animal into simpler compounds; to rot.

**Eradicate:** to remove completely.

**Exotic:** introduced from another environment; not native to the place where found.

**Fillet:** a piece or slice of boneless meat or fish.<sup>1</sup>

**Food chain:** the transfer of food energy from plants through a series of animals.

**Gyotaku:** a Japanese word meaning "fish rubbing."

**Habitat:** the place where an animal lives.

**Herbicide:** a chemical used to kill or inhibit the growth of plants deemed weeds.

**Invasive:** tending to spread; a vigorous non-native species.

**Lateral line:** a canal along the side of a fish containing pores with sensory organs that detect vibrations.

**Limiting factor:** a habitat component, that by its availability determines the survival of an individual or population.

**LUNKERS, Little Underwater Neighborhood Keepers Encompassing Rheotactic Salmonids:** submerged log structures designed to replace natural cover in a stream. (Rheotactic means orienting toward current.)

**Mercury:** a naturally occurring element that when released, can enter the food chain and adversely affect health.

**Minnow:** the largest family of all freshwater fish. Minnows tend to be small; carp, however, can grow to four feet in length. The term is often incorrectly used to refer to any small fish.

**Mucus:** a slimy substance that protects fish from disease and fungal infection and helps it to slip through the water or a predator's grasp.

**Multiple use:** a system of management in which lands and waters are used for a variety of purposes. The uses are not necessarily simultaneous but are intended to be compatible.<sup>2</sup>

**Non-native:** exotic or alien plants and animals that originated in another part of the world.

**Non-point pollution:** pollution from many sources carried overland into water bodies by runoff.

**PCBs:** polychlorinated biphenyls; industrial chemicals widely used until banned in 1977 due to environmental concerns.

**Personal watercraft:** A motorized vessel less than 15 feet in length operated by a person sitting, standing or kneeling; commonly known as a Jet Ski®.

**Phytoplankton:** tiny plants at the base of the aquatic food pyramid.

**Plankton:** tiny plants and animals suspended in water; usually microscopic.

**Pollution:** harmful substances deposited in the air, water or land, leading to a state of dirtiness, impurity or unhealthiness.<sup>2</sup>

**Possession Limit:** the maximum number of fish an individual may have, including those still held from previous days of fishing.

**ppm parts per million:** a unit of measure; the number of parts of a substance in a million parts of another substance.

**Recycling:** to return a product to original components for reuse. Nature recycles dead plants and animals through decomposition or rotting.

**Restore:** to return something to its original state.

**Runoff:** water from rain or melted snow that flows

overland, picking up pollutants and sediments before ultimately reaching lakes and streams.

**Sediments:** material deposited by water or wind that settles to the bottom of a body of water.

**Slime:** a protective substance secreted by fish; mucus.

**Sorting fish:** returning a fish to the water, after it has been taken into possession, in exchange for another, usually larger, fish of the same species that counts toward the angler's bag limit.

**Spawning:** producing or depositing eggs.

**Species:** a population of individuals that share similar physical features and are able to breed and produce fertile offspring under natural conditions; a category of biological classification immediately below the genus or subgenus.<sup>2</sup>

**Structure:** submerged natural objects and changes of bottom type that attract fish for spawning, feeding and resting.

**Weeds:** a plant out of place of little or no value.

**Wisconsin:** a Midwest state of the United States of America; an Ojibwa word that translates to "gathering of the waters."

**Zooplankton:** tiny animals suspended in water; an important link in the aquatic food chain.

## Sources

<sup>1</sup> Webster's Dictionary

<sup>2</sup> Project Wild Glossary

All others, Department of Natural Resources Staff





John Miller



PUB-FH-915 2006